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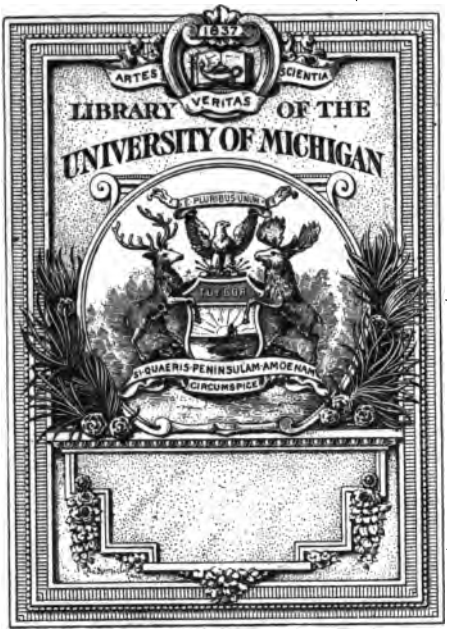
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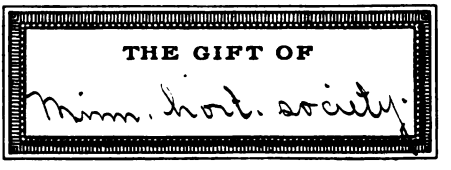
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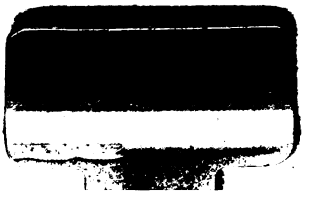

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TRANSACTIONS

—OF THE—

MINNESOTA

STATE HORTICULTURAL SOCIETY.

PROCEEDINGS, ESSAYS, DISCUSSIONS AND REPORTS,

—AT THE—

FALL MEETING,

—AT—

LAKE CITY,

SEPTEMBER 21, 22, 1881,

—AND THE—

ANNUAL WINTER MEETING

—AT—

MINNEAPOLIS,

JANUARY 16, 17, 18, 1882.

Prepared by U. S. HOLLISTER, Secretary.

1882.

ST. PAUL:
J. W. CUNNINGHAM, STATE PRINTER.
1882.

NOTICE TO CORRESPONDENTS.

Secretary Hollister having gone South, to be absent an indefinite length of time, the Executive Committee, on the first of June, 1882, at Mr. Hollister's request, appointed the undersigned acting Secretary with authority to superintend the publication and distribution of the Transactions for the current year, and to perform all other duties devolving on the Secretary during Mr. Hollister's absence.

Address, OLIVER GIBES, JR.,
LAKE CITY, Minnesota.

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E. H. S. DART, Owatonna.

Committee on Legislation—(See Tuesday morning.)

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Committee on Meteorology.

WM. CHENEY, - - - - - -

Committee on Geology.

PROF. WINCHELL, - - - - - - Minneapolis.

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The EXECUTIVE COMMITTE, J. T. GRIMES and U. S. HOLLISTER.

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G. W. FULLER,	Litchfield, Meeker "
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MISS HORTENSE SHARE, - Rosemount, Minn.,—Elected 1881.
MRS. L. E. P. SPRAGUE, - - Minneapolis, " " "
MRS. ATWATER, - - " " " "
MRS. W. R. MURRAY, - - Lake City, " " "

CHAPTER 72, GENERAL LAWS OF 1881.

AN ACT TO AMEND CHAPTER THIRTY-SIX (36), GENERAL LAWS OF ONE THOUSAND EIGHT HUNDRED AND SEVENTY-THREE, (1873), RELATING TO THE STATE HORTICULTURAL SOCIETY.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. That section (2) of said act is hereby amended so as to read as follows:

SEC. 2. There shall be annually printed five thousand copies of the report of the State Horticultural Society, *Provided* the number of printed pages of the same shall not exceed three hundred (300), which report shall be made to the Legislature, and the Secretary of State shall destribute the same as follows, to-wit: One thousand (1000) copies shall be bound in cloth and distributed in making the customary exchanges and in supplying one copy to every public library and kindred society or scientific institution, and the balance to the State Horticultural Society; four thousand (4000) copies in paper covers to be destributed as follows: One copy to the editor of every periodical in this State, one (1) copy to each member of the Legislature and the officers thereof. and each of the State officers; one hundred (100) copies to the State Agricultural Society, five hundred (500) copies to the State Board of Imigration, fifty (50) copies to each County Horticultural Society, who shall report an abstract of its proceedings for publication in said volume to the State Horticultural Society, twenty-five (25) copies to each County Agricultural Society, who shall report annually to the Secretary of the State Agricultural Society, as provided by statute, and all remaining copies to the State Horticultural Society, *Provided* that the expense of such publication and distribution shall not exceed in any one year the sum of seven hundred and fifty (750) dollars.

SEC. 2. Section three (3) of said act is amended to read as follows:

SEC. 3. That the sum one thousand dollars ($1,000) be annually appropriated. out of any moneys not otherwise appropriated, to aid the said Horticultural Society in the work of distributing said reports, collecting data, specimens pertaining to Horticulture, providing a suitable place for its books, specimens and articles of the society, and for payment of salary and expenses of its secretary and committees for labor actually performed by them, and other uses that may, in the opinion of the board of directors, be deemed necessary and proper. The said sum shall be paid by the State Treasurer on the order of the President of the said Horticultural Society.

SEC. 3. This act shall take effect from and after its passage.

Approved March 7, 1881.

MEETING OF EXECUTIVE COMMITTEE.

In compliance with resolutions passed at the annual winter meeting of the Minnesota State Horticultural Society, January 23, 1881, the executive committee was called together by the president to consider the subject of a fall meeting at Lake City and such other business as should be deemed proper.

The committee met at St. Paul, July 12, 1881. Present,—President J. S. Harris, Wyman Elliot, Truman M. Smith, J. M. Underwood, D. W. Humphrey and the Secretary.

It was decided to hold a fall meeting of the State Society at Lake City, beginning at 9 a. m., Sept. 21st and continuing two days, and that the exhibition should include fruits, flowers and vegetables.

Upon motion of Mr. Smith, it was decided to offer premiums on single plates, both of fruits and vegetables, and that five specimens should constitute a plate.

The sum of one hundred dollars was appropriated for premiums, and fifteen dollars for printing programmes and premium lists.

The sum of two hundred dollars was appropriated to offer as premiums at the winter meeting.

J. M. Underwood, John S. Harris and U. S. Hollister were appointed a committee on premium list, and Oliver Gibbs, Jr., superintendent of exhibitions.

A committee to look after seedling apples was appointed, consisting of A. W. Sias, M. Pearce, J. S. Harris.

Committee appointed on premium list for winter meeting, Smith, Elliot, and Hollister.

LIST OF PREMIUMS'

OFFERED AT THE FALL MEETING AT LAKE CITY.

APPLES, HYBRIDS AND PLUMS.

5 Specimens to constitute a Plate.

Best Plate	Duchess of Oldenberg	1st	Prem.	$2.00	2d	Prem.	$1.00
"	Wealthy	1st	"	2.00	2d	"	1.00
"	Tetofsky	1st	"	2.00	2d	"	1.00
"	Walbridge	1st	"	1.00	2d	"	50
"	Utter's Red	1st	"	1.00	2d	"	50
"	Haas	1st	"	1.00	2d	"	50
"	Fameuse	1st	"	1 00	2d	"	50
"	Seedling apples not before exhibited	1st	"	2.00	2d	"	1.00
"	Variety not named	1st	"	2.00	2d	"	1.00
"	Whitney's No. 20	1st	"	1 00	2d	"	50
"	Early Strawberry	1st	"	1.00	2d	"	50
"	Beach's Sweet	1st	"	1.00	2d	"	50
"	Conical	1st	"	1.00	2d	"	50
"	Power's Large Red	1st	"	1.00	2d	"	50
"	Virginia	1st	"	1.00	2d	"	50
"	Minnesota	1st	"	1.00	2d	"	50
"	Orange	1st	"	1.00	2d	"	50
"	Hybrid not named	1st	"	1.00	2d	"	50
"	Desert Hybrid	1st	"	1.00	2d	"	50
"	Long Keeping Hybrid	1st	"	1.00	2d	"	50

PLUMS.

25 to constitute a Plate.

Best Plate	Weaver	1st	Prem.	$2.00	2d	Prem.	$1.00
"	Forest Garden	1st	"	2.00	2d	"	1.00
"	De Soto	1st	"	2.00	2d	"	1.00
"	Variety not named	1st	"	2.00	2d	"	1.00

GRAPES.

5 Bunches to constitute a Plate.

Best Plate	Concord	1st	Prem.	$2.00	2d	Prem.	$1.00
"	Deleware	1st	"	2.00	2d	"	1.00
"	Agawam	1st	"	2.00	2d	"	1.00
"	Worden	1st	"	2 00	2d	"	1.00
"	Clinton	1st	"	2 00	2d	"	1.00
"	Janesville	1st	"	2.00	2d	"	1.00

SPECIAL PREMIUMS OFFERED BY THE JEWELL NURSERY CO.

Best Display of Apples		$10.00	in Nursery Stock, winner's selection.				
" "	Hybrids	10.00	"	"	"	"	
" "	Grapes	10.00	"	"	"	"	

FLOWERS.

Best Round Bouquet—cut flowers		1st Prem.	$2.00	2d Prem.	$1.00
" Flat " "		1st	"	2.00	2d	"	1.00
" Floral Design "		1st	"	2.00	2d	"	1.00
" Show Pansies "		1st	"	1.00	2d	"	50
" " Verbenas "		1st	"	1 00	2d	"	50

VEGETABLES.

Best Peck Navy Beans	$1 00
" " Wax Beans	1.00
" " Beets	1 00
" Six Cabbages	1.00
" " Cauliflower	1.00
" " Celery	1.00
" Peck Red Onions	1.00
" " White Onions	1 00
" " Yellow Onions	1.00
" Three Hubbard Squash	1 00
" Largest Squash	1.00
" One half Peck Tomatoes	1.00
" Peck Early Potatoes	2 00
" " Late Potatoes	2.00
" " Sweet Potatoes	2.00
" " Cranberries	1.00

SPECIAL PREMIUMS OFFERED BY THE FARMERS OF WABASHA AND GOODHUE COUNTIES.

One Half Bushel Yellow Dent Seed Corn		1st Prize	$2.00	2d Prize	$1.00
One Half " " Seed "		1st	"	2.00	2d	"	1 00
One Half " Hard Spring Wheat		1st	"	2.00	2d	"	1 00
One Half " Winter Wheat		1st	"	2 00	2d	"	1.00
Display Potatoes		1st	"	5.00	2d	"	3.00
Gallon Amber Cane Syrup		1st	"	3.00	2d	"	2.00

PROCEEDINGS

OF THE

FALL MEETING AT LAKE CITY,

SEPTEMBER 21-22, 1881.

This, the first Fall Meeting of the State Horticultural Society, encountered such an unfavorable state of weather as to nearly discourage all interested. The arrangements were all admirably made by the people of Lake City, and in spite of the incessant rain there was a magnificent exhibition, a good attendance and much interest in horticulture developed. Owing to the unpleasant state of the weather no formal organization was effected the first day, but the time was well spent in arranging articles for exhibition, etc., aud in general horticultural talk.

SEPTEMBER 22.

Meeting called to order by president Harris, at 10 a. m. It was arranged for Gen. McLean of Frontenac, to deliver the address of welcome, but he being unavoidably absent, Mayor J. M. Underwood, in a few words, tendered to visiting members the hospitality of the city.

PRESIDENT JOHN S. HARRIS

Being called upon for his address—as per programme—responded as follows:

Gentlemen of the Minnesota State Horticultural Society, and Visitors and Exhibitors of the Fair: I find that I am set down upon the programme for an address. Owing to recent severe illness, the labors and anxieties of attending the late State Fair, and an unusual pressure of business at home, I appear before you wholly unprepared for the occasion, and the few words I shall have to say will be rambling and disconnected. If there is any institution or organization in this State that I love and cherish above all others it is the State Horticultural Society. Our society may not, to the minds of those who believe that the actual necessities of life are of more importance than the luxuries, appear to be as essential an institution as the State Ag-

ricultural Society, but it has a mission, which is to make men better and happier, and this will only be accomplished when all the people of our great and growing state have an abundance of the choicest home grown fruits, every home its vegetable and flower garden and every waste and untillable spot is covered with forest. It has already reached a condition where its influence is being felt in every part of the State. I am a warm friend of the State Agricultural Society, and those who have known me for the past fifteen years can bear testimony that I have stood by it faithfully and helped to uphold it in its darkest hours, notwithstanding I have often felt that in their annual fairs the fast horse has frequently been given more prominence than I believed to be expedient or profitable. But as education is a better means of promoting reforms and setting things in their right positions than ignorant and violent denunciation, so I would not rail out about their shortcomings, but would continue to exhibit with them such articles as will by their beauty and utility counteract the evil. There is probably no better means of promoting horticultural education than the public exhibition of fruits, flowers, etc., where the best growers are brought into sharp competition. The veriest dolt may get ideas upon such occasions as will tend to make him a lover of horticulture, if not a skillful horticulturist; and when he shall have been such, the race course will become to him the least attractive part of the fair. There is not an agricultural society in America that publishes so generous a premium list for horticultural products as our Minnesota State Society, or that pays the premiums awarded more promptly and cheerfully. And this condition of things has been brought about through the influence of our intelligent fruit growers. Fifteen years ago the amount of premiums offered that could be taken by Minnesotians was: $5 and $3 for the greatest variety of apples; $5 and $3 for best exhibits of fruits; $3 and $2 for best exhibits of pears; $5 and $3 for green house plants, and a few dollars for hand bouquets and variety of cut flowers—I think about $50 all told.

At the last State Fair held in Rochester the premiums offered aggregated $716 on fruits and flowers and $331 on garden vegetables, which covers nearly one-fourth of the entire amount offered in all other departments. All will admit that they have done well by us and merit our good will.

This is our first fall meeting for many years, and the first fair we have ever attempted to hold independent and alone. This meeting may appropriately be called an anniversary meeting, and we will be justified in reviving the past, congratulating ourselves upon our present prosperity and in indulging in fond hopes for the future. Our society was organized in Rochester in 1866, under the name of the Minnesota State Fruit Grower's Association. The first meeting was called at the office of Dr. Cross, on the evening of October 4, and on the evening of the 5th a constitution was adopted and officers elected. The whole number of names enrolled was twelve. The proceedings of those meetings and the list of the original members have been lost and therefore there yet remains a little uncertainty about who some of them were, and steps ought to be taken to secure a correct roll if possible, to hand down to posterity. The next annual meeting was held on the afternoon of October 4, 1867, under the amphitheatre of the race-course. The attendance was small, partly owing to a drizzling rain storm, and no business was transacted except the election of officers, and an adjourned meeting was held in the evening at the office of Dr. Cross and continued to a late hour. At this meeting there was considerable enthu-

siasm manifested by Col. Robertson, Messrs. Harkness, Hoag, Walters, Harris, and one or two others, and they were branded by the more sedate and doubting Thomases as slightly insane or very visionary. The late Mrs. P. A. Jewell was present at those meetings and became the first lady member of the society. The membership was not increased above the original number, but was somewhat changed. This was partly owing to the very unfortunate state of the weather.

The next meeting of the society was held at Faribault, January 30, 1878, and was the first of the annual winter meetings, and from that meeting perhaps may be dated the real growth and prosperity of the society. The winter meetings have continued to grow in interest and they have exerted an influence for good that is felt in all sections of the State, and in fact over the whole Northwest, and it has enjoyed a steady increase of membership.

The winter of 1872-73 was the most disastrous to fruit trees of any ever known in the West. The bright visions of fruit in abundance were suddenly darkened. Our orchards and vineyards were laid low, and the croakers on every side met us with "I told you fruit could not be raised in Minnesota." But our society met the emergency with a firm determination to overcome every obstacle or perish in the attempt, and thanks to the aid granted us by the legislature of 1873, in publishing and distributing our transactions, the disasters of that winter did not prove any great calamity. Since that date there has been no interruption to our growth and prosperity, and our influence has become second to no society in the State. Among the cheering results are the establishment of a State Experimental Fruit Farm of 116 acres, and an annual appropriation of $1,000, to be expended in raising seedlings, and testing new varieties with a view to originating new varieties of apples that shall he hardy and good, and withal long keepers. The last legislature granted an additional annual $1,000 to the society to further aid in developing the fruit interests of the state. This sum if carefully husbanded and judiciously expended may be made to return to the State a thousand fold in material wealth, and will accomplish much in increasing the intelligence, comfort and morality of our people. Nor are these the only causes we have for congratulations. Already are the fruits of our labors being seen and felt, as is manifested in the splendid exhibits of orchard, vineyard, garden and floral products spread upon the table before you.

I have always been accused of being a little visionary, but the great variety of apples and grapes of Minnesota growth, and many of them of Minnesota origin that I have seen at the fairs this season (and it is not a good year for fruit either), surpass my most sanguine expectations, and I cheerfully acknowledge myself beaten as an exhibitor, as the awards of first premiums will testify.

At the State Fair of 1866 twenty square feet of table was ample for the display of all the fruits present, and I do not think the whole number of entries exceeded a dozen, and in the floral department still less. At the late State Fair, entries of fruits exceeded 380, and 500 square feeet of table was found entirely inadequate for the display, and of green house plants and flowers there was at least a car-load. Wonderful indeed is the progress of fifteen years. Then our apples in variety were less than a score of named varieties, and a few seedlings, and of Siberians only four, and the Concord, Clinton, Isabella and Black Cluster were the only grapes. Now behold varieties of apples more than five score, and more than fifty Siberians and Hybrids, some of them as large as the more popular apples, and unsurpassed for delicious flavor and marvelous for their beauty.

This speaks volumes for the energy and perseverance of Minnesota Horticulturists. However, it remains a fact that of this great number of varieties but a few are hardy enough to be reliable at all times and in all places, or are otherwise desirable for general cultivation. But in the past, fruit raising has been mostly an experiment, and a very costly one to some of those who entered into it extensively. But the experiment has demonstrated that the Duchess of Oldenberg is hardy and productive, and will succeed everywhere; that the Tetofsky is about equally hardy, and is adapted for gardens and small places. It has given us the Wealthy, which was originated in our own State by the venerable Peter M. Gideon, and has already acquired a National fame because of its hardyness, productiveness, beauty and good quality. That variety is now taking its place in the front ranks of pomology and will prove a monument to the originator more lasting than marble. As long as civilization lasts history will tell the story of the old Hero who has accomplished a greater good to the people of the Northwest than many renowned generals who lead armies on to victory. I might mention many other varieties that are doing reasonably well in certain localities and are proving worthy of cultivation, but you are all familiar with them and as we have set out to make a pomology of our own we hope very soon to have something better that will be safe to plant everywhere. I did intend to speak of our grapes but will only remark that the present season they have produced larger crops and better fruit than in the states south of us, and, lest I weary your patience, will pass on from the past and present to the future. What will the future of horticulture be? Minnesota has a soil of great fertility and a climate salubrious for man and beast. Her people, for enterprise and industry, stand peers with the first states and nations on the earth. They have refined tastes and are fast developing the means that will enable them to gratify their every desire. They realize the important part that horticulture is taking in promoting virtue, comfort, prosperity and civilization. They appreciate the work that the State Horticultural Society has already undertaken to accomplish, and sympathize with us in all our disappointments and trials, and more and more will they extend to us the facilities for the prosecution of our work. We have science at our command, and more can now be accomplished in the improvement of fruits in a single decade than in the days of our fathers in a lifetime. Natural hybridization and cross impregnation of plants is as old as creation, and during all the past ages has aided man in the work of amelioration, and the laws of reproduction and vegetable physiology were so nearly understood that we have but to become familiar with their operations to very nearly know the end from the beginning. Knowing these things of which I have spoken, I feel safe in saying that for the future of horticulture a good time is coming. Our beloved Minnesota will yet occupy a position equal with any of the northern states as a producer of hardy fruits. Our fertile prairies will be dotted over with groves, forests, fruitful orchards and happy homes. Vineyards will adorn our hillsides, and instead of expending our hard earnings for a meagre supply of fruit and enriching others, we shall enrich ourselves by sending our surplus to less favored climes. And the coming horticulturist will be the true country gentleman, fitted to adorn any station in life. He will be a man of the most liberal education, and, understanding the laws of nature, will know how to apply science to his calling. He will be able to divide his time between his orchard and garden, conservatory and library of the best publications of the age. He will have his museum and cabinet and have a personal ac-

quaintance with the birds and insects and can distinguish between his friends and foes and keep each in their proper place. The world will honor him and a beneficent Creator smile upon him.

M. Pearce of Minnetonka Fruit Farm, read the following paper on

STRAWBERRY CULTURE.

A good location, with the right kind of soil, under the management of an experienced strawberry grower, and we seldom need have a failure, with the varieties he is acquainted with. So much has been written and said on strawberry culture, that there is no excuse for ignorance in this important branch or horticulture. Nevertheless, with all the light that has been thrown on the subject, I do not think there is one individual out of twenty who tills the soil for a living, who is competent to select location, fit the soil, and make proper selections of varieties and arrange them as they should be on the ground, so that a good yield of large and delicious fruit could be expected.

Much care and judgment must be exercised in selecting soil and location to grow strawberries. It should be as free from frost as possible, level, to prevent washing, and easy to cultivate; should be new, of a rich, sandy loam or leaf mold, which is better than side hills. Knolls of all description, bleak places where the snow blows off in the winter should be avoided.

The soil must be rich to very rich, depending on what varities are to be grown, as there are but few varieties, if any, when rightly understood, that require the same richness of soil.

In all cases the ground should be plowed deep and sub-soiled if possible. When but one or two varieties are to be grown, such as the Wilson or Downer, it is not a hard matter to fit a piece of new ground or clover sod on which either do well. But if it is your intention to grow large quantities of the largest and best varietics for market, such as will sell at sight in an overstocked market, at the highest market price, quite a different course must be pursued. To accomplish this, we will suppose a proper location and soil has been selected, plowed and harrowed level, sufficiently rich to grow an average crop of corn.

Make a plat of the land thus prepared on paper, marking it off in rows representing four feet apart, numbering each row commencing with No. 1, 2, and so on, till all are numbered. We then select our varieties, an equal number of pistillate and hermaphrodite. In making these selections it is absolutely necessary that the individual be well acquainted with each variety, or have it from those of good authority. We test the vigor of plants on soil that will grow an average crop of corn usually without manure. Thus we will take the Glendale, vigorous 1, hardy 1, prolific 1, quality 1, size 1, shipping qualities 2, a very good fertilizer 1, scores 8. Crescent Seedling, very vigorous 2, ver yhardy 2, wonderfully prolific 3, size good 1, quality good 1, sells well 1, scores 10. In this way we select the varieties we plant, using those that score the most good points. According to our method, the following varieties score as follows: Sharpless 10, Wilson 6, Capt. Jack 6½, Seth Boyden 8, Col. Cheney 8, Charles Downing 8, Winsor Chief 8, Pioneer, or King of the North 10, Downer's Prolific 5, Green's Prolific 6, Prouty's Seedling 7, Hart's Seedling 6.

Bidwell and several other varieties we have not fully tested. Our choice of the above varieties, after taking into consideration the good points of each variety would be six, namely: Glendale, Crescent Seedling, Sharpless, Seth Boyden, Col. Cheney, Pioneer, or King of the North.

The next thing to be done is to assign each of these varieties to their proper place on the ground, that has been plowed, harrowed and platted on paper in rows four feet apart, and each row numbered.

To row No. 1, we will assign the Glendale, for the following reasons: it is a strong, hardy, healthy, vigorous plant, an early and late bloomer, fruit large and firm, one of the best fertilizers, just such a plant as should always be grown by the side of Crescent Seedling. I will here state this plant is vigorous on the soil on which we make the trial test, but not *very* vigorous, which should be the condition of all plants to grow the best of fruit and the greatest yield Well rotted manure, wood ashes, or leaf mold should be applied to each row where such plants are to be set, to bring them up to the proper degree of vigor. We use nothing but leaf mold, which we consider the best of all manures for the strawberry.

To row No. 2, we assign the Crescent Seedling, very vigorous, very hardy, and exceedingly prolific. A pistillate variety.

To row No. 3, we assign the Sharpless; vigorous, hardy and prolific. Fruit of the best quality and very large (hermaphrodite) and one of the best fertilizers.

To row No. 4, we assign Col Cheney, vigorous, hardy and prolific. Fruit large and of the best quality. A pistillate variety.

To row No. 5, we assign the Pioneer or King of the North, wonderfully vigorous, very hardy and prolific. Fruit large, quality averages with the best, a good shipper (hermaphrodite.)

To row No. 6, we would assign Seth Boyden or Windsor Chief, both vigorous, hardy and prolific. Fruit large and of the best quality. Both pistillate, or nearly so.

Our varieties would here cease, and would plant row No. 7 to Glendale, No. 8 to Crescent, No. 9 to Sharpless, and so on till our rows were all planted to those varieties named. I am aware that many good varieties have been left out, such as the Wilson and Charles Downing, &c. But let it be borne in mind, our aim is a large amount of fruit, of the largest size and best quality, and not varieties. Here is where a great mistake is often made.

Four feet one way and twelve or fifteen inches the other way, owing to what varieties are being planted, I consider the proper distance to plant. The ground should be smooth and level, and the plants set straight in the rows, which will be a great saving of labor in cultivating. In setting plants, be careful and not set too deep or cover the crown, which always kills or injures the plants.

Cultivation should commence as soon as the plants begin to grow, especially if the ground is foul, which is usually the case. Use at first, a light, fine, one horse harrow, with handles, and go two or three times between the rows as close to the plants as you can and not disturb them. Repeat this each week until the plants begin to throw out runners. Then lay aside the harrow and use a light cultivator. The utmost care and judgment must be exercised in using the cultivator not to hill up the plants.

Cultivate but one way and keep an open space of at least two feet between the rows, and never allow the plants to close it up. Hoeing must also commence with the harrowing in the rows between the plants, use a light, sharp, thin-bladed hoe

and cut under the little weeds and grass, and a few hours hot sun will kill them without removing them from the ground where they grew. The hoeing must be continued until the plants take entire possession of the space between.

A bed of strawberry plants of two or more acres, of the varieties named, and managed as directed, will present a beautiful appearance in the fall, the rows will be covered about two feet wide, with strong, healthy, vigorous plants, with foliage varying from dark to light green. Mulching the plants to protect them against the cold of the winter and thawing and freezing in the spring, with most varieties, is very essential.

This should be done in early winter, after the first permanent fall of snow, by spreading about two inches of straw, free from all foul seeds on the snow over the plants, or what is still better, marsh hay or forest leaves. The mulching should remain over the plants as late in the spring as possible, not to injure them, and then raked on the open spaces between the rows, and there remain to keep down the weeds and the ground moist, which the plants always require when fruiting. A sufficient amount must be left on and about the plants to keep the fruit from the ground. Nothing now remains to be done till after the fruiting season, but to pull up all weeds that may make their appearance. When the fruiting season is over remove the mulching, if not rotten, and cultivate thoroughly between the rows. Set a new bed, and plow up the old one after the second year's crop.

A vote of thanks was tendered Mr. Pearce, and the paper ordered published with the Transactions.

Mr. Gibbs asked how he separated the leaf mold from the rubbish of the forest.

Mr. Pearce replied, that he simply raked off the sticks and leaves, and used the top soil.

Mr. Stevens inquired if the sorts named, would do well on the prairie.

Mr. Pearce said he thought they would all do as well on the prairie, as in his Minnetonka woods.

Mr. Harris asked how the prairie people would secure leaf mold.

Mr. Pearce replied, that he would take top soil from any place he could get it.

He further stated that the Glendale and Pioneer were both good shippers, and that the Pioneer would remain a long time on the vines after ripening, without injury.

The Cresent Seedling he found to be a big cropper, but too soft for shipment.

The Seth Boyden and Windsor Chief, large fine market fruit.

For the farm, he would recommend more common sorts, like the Wilson and Chas. Downing.

Mr. Underwood said farmers and towns people were all planting, and

asking which was the best? For years the answer had been, the Wilson Now, it was getting to be a serious question, what we shall recommend.

Mr. Pearce said there was so much difference in tastes, soil, and cultivation, that the question was a difficult one to answer.

Said he would name the the Crescent Seedling and the Glendale. He should plant of the Pioneer. Said they were very hardy and productive, and a special pet with him. He recommended a dozen sorts altogether, and said it was impossible to answer Mr. Underwood's question, so far as relates to s single berry.

Mr. Underwood asked how far apart plants of different varieties could be planted and secure perfect fertilization.

Mr. Pearce replied that this distance varied with different plants, from four to sixteen feet. Said he could raise 250 bushels per acre of Pioneer and Crescent Seedling mixed.

Mr. Harris asked about the Countess, as a farmer's berry.

Mr. Elliot thought it a good one, but that it would not carry safely long distances. He was surprised at Mr. Pearces' position, in ignoring the Wilson. He considered it the best for shipment of all good sorts, and liked the Green Prolific for home use. In reply to Mr. Underwood's question as to the comparative value, as compared with the Crescent Seedling he said, the Crescent was much the best.

The principle objection he had to the Crescent was the fact, that it sometimes failed to fertilize in rainy weather.

Mr. Abernethy thought the society far behind in its recommendations of strawberries for general planting. He said there must be a few entitled to consideration as the best, and that this society ought to know it, and be fearless in recommending them, that there are many new and valuable varities.

Mr. Elliot would not advise the Sharpless for general cultivation.

Mr. Underwood thought Mr. Abernethy too sweeping regarding the recommending of new, untried, highly advertised Eastern strawberries. Said we must put these new things on trial in the West, and not recommend them until trial, because they were well advertised.

Mr. Gibbs moved that all farmers who subscribed to the special farmers' fund as premiums to this exhibition, be entered as members of the State Horticultural Society for current year, and be entitled to the published Transactions; carried.

The following names, as per the action of the society are enrolled:

P. H. Rahilly,	W. S. Arnold,	E. F. Carpenter,
J. C. Bartlett,	Chas. Gould,	D. G. Heggie,
Joel Clark,	Collins Pratt,	Grannis & Wilson,
E. C. Eaton,	H. Webster,	C. C. Roberts.

Dr. D. C. Estes appeared before the meeting, and invited all to visit his museum of natural history, which invitation was accepted.

O. Gibbs, Jr., as Chairman of the committee on articles on exhibition, reported as follows:

REPORT OF COMMITTEE ON EXHIBITS.

Mr. President, and Fellow-Members:—It is with more than ordinary pleasure that your committee undertake the duty of summarizing the exhibits at this meeting, for a permanent record in the transactions of the society, as we have here, before us, for the first time in our history, what appears to be, in our leading department, that of autumn fruits, a display of nearly all the varieties in the state, with the exception perhaps, of a few undiscoverd seedlings, and insignificant crabs, and shown as a general rule in good condition as to form, size, maturity and color, and that outside bloom and finish that makes all our well-grown Minnesota fruit remarkable by contrast with the same or similar varieties grown elsewhere. Besides this statement, we think it is the opinion of all present that our display at this time is the best ever yet obtained in the State on any occasion, although perhaps the number of individual exhibitors may possibly be less than at some of our State Fairs. We find upon our tables 100 plates of apples, seventy of hybrids and crabs, twenty-four of grapes and ten of plums.

The individual exhibitors of fruit and the varieties shown, are as follows:

Underwood & Emery, Lake City. Duchess, Tetofsky, Wealthy, Fameuse, Saxton, White Astrachan, Plumb's Cider, St. Lawrence, Fall Orange, Deomia, Minnesota, Whitney No. 20, Conical, Gen. Grant, Maiden Blush, Orange, Akin's Striped Winter, Jewell's Red Winter, Beecher Sweet, Hutchinson Sweet, Russet Sweet, Golden Beauty, White Winter, Green Winter, Lady, Early Strawberry, Angular, Orion, Pickett's Prolific, Vermont Red, Pine and Yellow Transparent, in apples and crabs. Forest Garden, Weaver, DeSoto and Miner Plums. Delaware, Agawam, Clinton, Janesville and Lindley grapes.

Oliver Gibbs, Jr., Lake City. Haas, Minnesota, General Grant, four varieties unnamed hybrids, Angular, Talman Sweet, Price's Sweet, and seedling winter apple.

S. S. Workman, Lake City. Concord, Agawam, Rogers' 19, Delaware, Muscadine, Dracut Amber, Clinton, Hartford Prolific and seedling grapes.

G. M. Dwelle, Lake City. Quaker Beauty, Hyslop and unnamed red crab.

M. M. Ingram, Lake City. Talman Sweet.

Abner Dwelle, Lake City. Wallbridge.

S. K. Gates, Lake City. Sweet Seedling apple.

Mrs. Montgomery, Lake City. Angular and Meader's Winter.

S. Hazlett, Lake City. Quaker Beauty and Seedling apple.

Wm. Jewell, Lake City. Hutchinson Sweet.

Myron Hill, Lake City. Hyslop.

F. H. Doughty, Lake City. Concord and Clinton grapes.

H. D. Wickham, Lake City. Perry Russet and Golden Russet.

Thos. Mateer, Glasgow. Minnesota, Price's Sweet and Alexander.

N. Schmidt, Glasgow. Fall Orange and Wallbridge.

B. B. Fetzer, Glasgow. St. Lawrence.

Mrs. Thomas Crawshaw, Lake. Utter's Red and General Grant.

Theodore Bowen, Lake. Wealthy and Wallbridge.

M. D. Carroll, Lake. Unnamed Sweet Crab.

Mrs. Agnes Frost, Lake. Utter's Red, Maiden Blush, Hesper Blush.

John Monroe, West Albany. Green Winter.

C. Konig, Pepin. King Apple.

A. W. Fountain, Frontenac. Seedling Sweet Apple.

Mrs. Amelia Heine, Wacouta. Talman Sweet.

Joseph Church, Waconta. Seedlings and Golden Russet.

W. H. Roberts, Wacouta. Plumb's Cider and unnamed crab.

Baker Harrison, Mt. Pleasant. Plumb's Cider, Utter's Red, Haas and two unknown varieties.

Joel Clark, Mt. Pleasant. Talman Sweet and Plumb's Cider and Seedling Apple.

G. A. Cook, Cook's Valley. St. Lawrence.

Collins Pratt, Oakwood. Haas, Melinda, Wealthy, Duchess, Orange, General Grant, Seedling Sweet Apple, Gilliflower Crab, and Concord, Deleware, Janesville and Seedling Grapes.

J. S. Harris, LaCrescent, Seedling Hybrid Apple.

E. Wilcox & Son, La Crosse, Wis. Rhode's Seedling, Seedling Crab, Grimes' Golden, Jefferson County, Pewaukee and General Grant.

Wm. Forster, Chatfield. Seedling Winter Apple.

D. K. Michener, Etna, Fillmore county. Seedling Winter Apple.

W. E. Brimhall, St. Paul. Tetofsky and Virginia.

Wyman Elliot, Minneapolis. A display of Wealthies.

Geo. H. Nichols, Prescott, Wisconsin. Concord and Delaware grapes.

D. G. Heggie, Florence. Duchess, Wealthy, Haas, Gen. Grant, Hyslop, Hutchinson Sweet, Maiden Blush, Aikin's Striped Winter, Orange, Beecher Sweet, Transcendent, Red Siberian, Early Strawberry, Minnesota and Conical.

Among the seedlings included in the above list your committee would call the especial attention of the society to those of Messrs. Forster, Michener, Fountain, Hazlett and Harris, to the end that if thought advisable they may be further investigated by the committee on seedlings.

That of Mr. Forster was awarded the first preminm at the recent State fair at Rochester for the best winter seedling. Samples of bright, healthy four-year-old wood were shown, and statement made that the tree has been in bearing five or six years, and has produced in all about twenty bushels. (This from statement furnished to one of your committee by that respected fellow-member of our society, Martin W. Cook, of Rochester). Specimens from the plate here on exhibition will be put away for safe keeping till our next winter meeting, when this new candidate can be further examined, and receive a name if found worthy.

Mr. Michener's seedling certainly has the present symptoms of a long keeper. After having been handled over and over again for the hundredth time at Rochester and here, it is still a dangerous missel to throw at a tree-peddler, although represented by its producer to be capable of mellowing into eatable condition and

flavor about the first of May. Let us hope and pray that this may prove a hardy sort at least, that we may be able to add to our list a keeper.

Mr. Fountain's apple was awarded the first premium also at the State fair for the best seedling sweet apple. It is from a seedling orchard over twenty years old, planted by Mr. Uriah Lewis near Frontenac. A peculiarity of this orchard is that while it was planted from seedlings obtained from a barrel of apples in which there were no sweet ones, a majority of the trees produced sweet apples. The tree now under consideration has borne many abundant crops, and is yet in fair condition, and stands in rather low ground, adjacent to a marsh. Against this unfavorable location it has the advantage of a timbered bluff shelter on the south and west, and to this it doubtless owes its longer life. The apple resembles the Talman Sweet in color and flavor, though a little more elongated in form.

There may possibly be some question as to Mr. Hazlett's tree being a new seedling. It is not represented by the owner as such. The tree is an old one, is in good condition, and bears abundant crops. The apple shows for itself. It is a fair keeper.

The seedling of Mr. Harris is from Transcendant crab, supposed to be fertilized by Talman Sweet or Golden Pippin. According to this pedigree it should rank as a hybrid apple, as it shows more of the characteristics of an apple than of a crab. There is another seedling in the collection, furnished by Mrs. Geo. Hartman, of Hokah. Of this, as well as of his own seedling, Mr. Harris himself can furnish information not known to your committee.

Of the class of apples on exhibition known as hybrids or improved crabs, or if they be hybrids, more proper to be classed as hybrid crabs, your committee would invite attention to some of them, now that abundant samples are furnished, to be tested for their excellent quality as eating or dessert apples, in addition to their merits as orchard trees for hardiness, abundant bearing, etc. In this category we have the Minnesota, the Beecher Sweet, the Early Strawberry, the Whitney No. 20, the Conical, Angular, the Maiden Blush, the Hutchinson Sweet, the Hesper Blush, Sweet Russet and Seedling No. 8 Of the hybrid crabs, that are good cooking apples, the Orange is of delightful flavor and would rank as a fine dessert apple if it would get mellow, and the names of the others are too numerous to mention. Some of this class are fair to good keepers— particularly the Maiden Blush, Minnesota and Hutchinson Sweet, the latter being doubtless a late keeper.

In the line of grapes the Janesville deserves especial mention for its earliness and its consequent adaptation to localities subject to early autumn frosts. Its quality is good, and is said to make "the appetite grow with what it feeds on." The exhibitors of grapes are Underwood & Emery, S. S. Workman, Lake City; Collins Pratt, Oakwood, and G. H. Nichols, Prescott, Wis.

Of plums we have a large collection of Weavers, Miners, DeSotos and Forest Gardens from our Lake City hosts, Messrs. Underwood & Emery, and your committee take no risks in remarking that they (both plums aforesaid and *the hosts*) have been well sampled by the members of the society. If not strictly tame, these varieties are easily domesticated in Minnesota, and they are large, handsome and of excellent quality. The Miner has at last jumped into full bearing at a bound and are sold in Lake City this year by the bushel. The Weaver is a perfect freestone.

The show of cut flowers is not extensive in number of entries but the samples are fine in quality and condition, and arranged in designs and bouquets with excellent taste.

The collection is as follows: Displays of pansies and verbenas and four bouquets of gladiolas, dahlias, phloxes, roses and wild flowers, by Mrs. H. B. Sargent, of Lake City; a cross design in phloxes and geraniums by Miss Maggie Gibbs, of Lake City; a bouquet of geraniums and one of dahlias, verbenas and asters, by S. S. Workman, of Lake City, and a display of pansies by Mrs. D. G. Heggie, of Florence.

The grain and vegetable departments had the following entries: D. G. Heggie, Florence— blood beet, white French and yellow sugar beets, mammoth mangle, rutabaga, cabbages, cauliflowers, Danvers, white Portugal and red Weathersfield onions; acme and trophy tomatoes; peerless, snowflake and burbank potatoes, hubbard squash and large hybrid squash.

E. C. Eaton, Florence—cabbages, cauliflowers, hubbard squash, blood beets and mammoth mangle; rutabagas, white turnips, one-half long carrots, turnip beets, sweet corn, parsnips, yellow Danvers and red Weathersfield onions; peppers, celery, display of gypsey watermelons; early rose, beauty of Hebron, snowflake, blue imperial, peach blow, mammoth pearl, Burbank and Jordan prolific potatoes.

Chas. Gould, Central Point, display of potatoes, consisting of beauty of Hebron, early rose, Burbank, snowflake and mammoth pearl.

Oliver Gibbs, Jr., Lake City, early rose, beauty of Hebron, snowflake, Burbank, Jordan prolific and belle potatoes; white portugal and multiplying or potato onions, top onion sets, sugar beets, yellow and red globe and large red mangels, black spanish winter raddish, carrots, parsnips, tomatoes and Swede turnips.

W. S. Arnold, Florence, north star, yellow dent corn and Jordan prolific potatoes, samples of the latter weighing one pound 11½ ounces.

M. Pearce, Minnetonka, samples mammoth sugar, canada yellow, white dent and compton surprise corn; maple syrup and strawberry plants in pots and boxes.

Underwood & Emery, Lake City, sweet potatoes and potted strawberry plants.

Hiram Webster, Lake City, collection of garden seeds, forty-four varieties; black wax beans, table beets and top onion sets.

The samples in this department are all good, and many of them of unusual merit.

Of amber cane syrup we note but three samples. These are contributed by Grannis & Wilson, of the Central Point Steam Works, recently established, Knight Whipple of Minnetonka and George Perkins of South Troy.

In conclusion your committee would express the belief that this, the first independent exhibition meeting of the Minnesota Horticultural Society will impress all present as it does your committee, with the value of such meetings as a means of obtaining useful information, not easily found otherwise, and of disseminating it among the people, and that their continuance in the future will come to be regarded as something quite as worthy of popular attendance and patronage as any of our more miscellaneous but certainly not more useful annual fairs.

The agricultural horse trot may be an economical device to increase the speed and foster the class of horses that are wanted to trot rapidly in going for the doctor, but it is a fair question whether a better encouragement of horticultural meetings and shows to make good, wholesome fruit more plenty and cheap might not result in the doctors' professional visits being fewer, except in those cases where

they seem at present desirable for due observance of the commands of holy writ.

There is hope for the fruit interests of our State, and its success will not be far distant when public attention can be once more fixed upon it, and especially when our young men can be attracted to it as something worthy of their talent and ambition. Our processes in creating a pomology of our own in the production of seedlings and in the importation of varieties from regions where they grow under climatic conditions similar to our own, are at last becoming scientific and closely in accord with clearly defined laws of vegetable physiology, and it seems that though their steps are slower than the rapid strides we once hoped to make, results must hereafter be sure. Let us keep up our meetings and exhibitions and speed the work of making Minnesota not only one of the recognized fruit growing States, but the best in the Union, this side of the Rocky mountains, for where else can fruit be grown that approaches in beauty or exceeds in quality our own first born Minnesota seedling, our pride and pet, the Wealthy?

In this connection your committee would say there is reason to believe that at some meeting of the society not far distant the Wealthy will have good company in our list of seedling celebrities, produced in a number of localities about the State where careful experiments are being conducted.

In closing, your committee would suggest the consideration of the subject of a summer meeting at the proper time for an exhibition of small fruits and flowers and early vegetables. Respectfully submitted,

OLIVER GIBBS, JR.,
WYMAN ELLIOT,
M. PEARCE,
} Committee.

NOTE.—After the adjournment of the meeting a box of samples of Wisconsin fruits, comprising pears and several varieties of new seedling apples, also specimens of leaves, wood and bark of the several sorts, was received from George P. Peffer, of Pewaukee, Wisconsin. They were repacked for preservation for the next winter meeting, and consigned to the care of Wyman Elliot, Minneapolis, together with a barrel of samples collected from exhibits at this meeting.

2 P. M.

The following paper on Window Gardening was read by Mrs. W. R. Murray, of Lake City. A vote of thanks was tendered the lady, and the paper ordered published:

WINDOW GARDENING.

Although my subject is far from uninteresting, treated as it should be, Iam fearful a novice in essay writing will fail to do it justice. However, since a certain energetic and sprightly old gentleman has insisted that I undertake to convince you of a much greater knowledge of window gardening than I was ever guilty of possessing, I will endeavor to do so, begging your patient hearing, sincerely trusting there will be no fatal brain prostration from the amount of knowledge about to be

poured into theirs in so short a time, and rejoicing to think at the close of this reading the gentleman referred to will feel that he, at least, has been sufficiently punished.

Plants, in many respects, are like children—they want food when hungry, drink when thirsty, petting when sorry, and at all times the very best of care; failing to receive these attentions, like children, they become troublesome, like children they get very dirty, and like children they die. Just here let me speak a word for my favorites, who cannot speak for themselves. Ladies, do not be afraid of soiling your hands; plants are very easily insulted; if they become impressed with the idea that you dare not touch them without gloves on, they will immediately show signs of disapproval and end by cutting your acquaintance entirely. Again, is it not time and money thrown away for a person to devote the whole summer to the culture of house-plants, and the first cold snap allow them to freeze to the ground, or if not *quite freeze* to sleep so cold every night, they barely live and never bloom—are perfectly ashamed of themselves, and a distress to every one who beholds them? Why not—if a lover of flowers—cultivate annuals of which there are so many beautiful and interesting varieties?

If my house-plants failed to bloom freely for me during the winter, I should feel that I had very little compensation for the care and trouble bestowed upon them. I see no reason why any one should fail to cultivate plants who attend to their various wants, for in these few words lie the secret of success: take care of them. And now I propose to tell you, without doubt imperfectly, but I trust plainly, how I take care of mine. About the middle of May I remove my plants from the house to the open air and immediately commence re-potting those I wish to retain in jars and preparing cuttings of those I bed out. My bedding plants are not again taken into the house. I either put them in the cellar or leave them to perish. The soil for plants should be very carefully prepared. Ladies, for this purpose a man is absolutely necessary, showing, without doubt, the chief object of man's creation. Have a bushel of earth brought from some corner of your grounds where slops are never thrown; add to this about two quarts of fine sand and a peck of fertilizing material, that from a henery is best, rake all thoroughly together until not a lump or pebble is to be found, then just as fast as you bed out your plants fill the empty jars with earth and plant your cuttings for winter use; dampen with a sprinkler and place them in a warm, shady spot until the leaves brighten up, and remove to where they will have the morning sun for three or four hours. More is not required through our hot summers. Pinch all buds until about the middle of August, and when, about the middle of September, it becomes necessary to remove your plants indoors, you will find yourself the possessor of strong, well-rooted plants, ready and willing, with proper care, to gladden your hearts with their lovely blossoms, all through the long, cold winter. Plants require to be watered nearly every day, and many times twice a day, through the summer; the best time for doing this is after sunset, always using soft, tepid water. Some ladies seem to think plants are like camels, capable of taking an unlimited amount of water and retaining it until convenient to water them again; others mix with the water, salt, ammonia, and various other preparations, all of which are injurious, and just as long as practiced the plants will present a slender stick-like appearance, which, however beautiful it may be in the human form, is not desirable to the correct growth of plants. Our

dear Lord uses nothing but pure water for his immense flower garden; are we not perfectly safe in following His example?

During the winter, water your plants in the morning and only when they need it. Sprinkle thoroughly once a month, not oftener, unless your plants are infested with insects, which through the winter are sometimes very troublesome upon certain kinds of plants. Avoid keeping roses or carnations unless you have plenty of sun and intend devoting a great deal of time to their care.

Do not keep more plants than you have room for. They hate being crowded. Always give them a chance to reach out their arms and stretch. Give them all the light your windows afford. Nothing makes them more angry and disgusted than a pair of lace curtains; the fact that they are real lace makes no difference in their opinion. They are great sun worshippers, and they want nothing hung between them and the god they worship In my opinion, a window full of blooming plants far exceeds in beauty of coloring, fineness of texture and graceful draping any curtain ever yet manufactured.

Every person desirous of cultivating plants extensively ought to have a room built expressly for their use through the winter. I had long desired such a room but was unable to convince the master of the house that he had any money to invest so unprofitably, until about a year ago, (he happening to be in a very pleasant frame of mind) suddenly surprised me by remarking: "I tell you what; I will build you a conservatory if you will let me use it as a smoking room." Wasn't I happy? Didn't I put on my sweetest smile, while I hastened to assure him that nothing could give me greater pleasure than to see him smoking there? Of course I did. Trust a woman for that.

In a few days a carpenter made his appearance, with whom I immediately made friends, and together we built a room nine feet by fifteen, laid a double floor with heavy paper between, tightly sided and papered upon the outside, filled between the joist with sawdust and sealed up inside with narrow boards painted a very light drab, we having, as you will readily perceive, only one end in view, that of warmth. It has a western exposure and three large windows. A seven foot sliding-door connects it with the adjoining room. I had two tables made nearly as long as the rooms, one two feet higher than the other. Upon these I arranged my plants in an inclined plane towards the windows. By such an arrangement all have nearly an equal amount of light, and none are brought very near the glass. It is not advisable for plants to stand so near the window that any part of their foliage rests upon the glass. At midday they are frequently too warm and at midnight always too cold, and these extremes alone kill many rare and valuable plants through our long winters, which under the best of circumstances proves very trying to the delicately constituted plant. The first Sabbath morning after I had my plants all arranged to my *entire satisfaction*, the "master of the house" might be seen approaching the door of what he was pleased to call his smoking room—a peaceful look upon his face, a cigar in his mouth, and dragging behind him a monstrous chair. He drew near; he looked around—a change for the worse crept over his face; he whirls around and remarks (in a much louder tone than was necessary) to a delicate little woman standing not far away: "I should like to have you show me where I am going to sit down in this room." She, knowing that "a soft answer turneth away wrath," meekly replies: "Why, my dear, you

said nothing to me about sitting down to smoke." A slight muttering is heard and a disgusted man retires from the conflict. Ladies, your plants do not require smoking—they are not high-toned enough to enjoy it. All the long cold winter my plants gave me the greatest pleasure by responding bravely to the many calls made upon them; they helped to make lovely faces look lovelier in the merry dance; they decked the bride as she stood at the altar with the loved one of her choice; they ornamented the dear church of our Lord, and they lovingly nestled about the cold faces of many dear ones "who slept that sleep which knows no waking."

And so each flower its mission has,
For daily do they whisper to the soul
Sweet thoughts of goodness, tenderness and love;
They speak of all things true and beautiful,
And make us pray—that thus our hearts may be
A censer full of richest incense that
Shall rise unceasing to the throne of God.

At the conclusion of Mrs. Murray's paper the following article upon Cranberry Culture, by J. S. Stickney, of Wauwatosa, Wis., was read by the Secretary and ordered published.

CRANBERRY CULTURE.

Cranberries, and their cultivation and general management, on the natural cranberry lands in Wisconsin, have for the past few years, been to me, matters of considerable observation and study, some amusement, and much expense, all of which may prove of little use to myself or anybody else.

Yet when we consider the large amount and great value of this crop, I do not wonder at my interest, or regret my efforts. The first and strongest conclusion that forces itself upon me, is that after all, I don't know much about it.

This is less discouraging, because in the culture of all other fruits, I have often been driven to very similar conclusions.

Could I find a competent teacher, I could very soon be set right, but the truth is, even the most successful, seem to have done it more by chance than as the result of any definite plan or management.

I will briefly outline such facts as have presented themselves to my notice.

For location, such places are chosen as have a good supply of water, and so situated that by a system of ditches and dams, the ground can be flowed to the depth of one to two feet from November to May, and then, at the proper time, the water be promptly drawn off.

It is also desirable, at the upper part of the works, to have more or less of water that can be held in reserve and let on during the summer as the vines or fruit may need. On the perfect or imperfect working of this water system, much of the success or failure depends.

This water is usually put on about Nov. 15th, and drawn off abont May 15th. Some hold it on later to hold back the bloom and thus escape late spring frost,

but by so doing they are liable to run square into the embrace of a ruinous freeze in September before their crop is matured.

Many things are too short at *one end*, but our cranberry seasons seem a little short at *both* ends.

Next after water comes the question, is your land "well vined," that is, is it evenly and well covered with native vines? Happy is he who has this condition, for very soon after he has them under good water control, he will reap fair and in many instances bountiful returns.

If not *well* vined, a very light sprinkling of native vines, will in a few years, with the advantages of good water treatment, fully occupy the ground, but if these are absent, then vines must be planted.

This is done by taking pieces of vine 8 to 12 inches long, from 3 to 6 together, dropping them on the ground, and with the end of a thin strip of board placed near their middle, punch them into the mud 3 to 4 inches, so that the ends protrude an inch or two, one part will be wrong end up and will perish, but the other will be right and will be sure to grow. This work may be done all through June and July, and perhaps a month later. More rapid work is done by having a substitute for the thin board, fastened to the sole of the boot, and thus stepping the vines in. Of many acres thus planted I never lost three per cent.

Three feet each way will do, but two feet is much better and will occupy the ground and yield returns enough sooner to pay.

These planted vines do not come forward as rapidly as those of native planting, and the planter must be resigned to 4 to 6 years of patient waiting for full returns.

On all unimproved marshes there is more or less (usually more) moss. It is desirable to destroy this and get the vines down to, and rooted in the peat as soon as possible.

This moss killing is best done by perfect flowing until rather late in the spring, then draining it quickly and as dry as possible. With this treatment, a few warm sunny days usually do the work.

On all marshes are found patches of sage, featherbush and willows, disputing possession with the cranberries, and in many places getting "the lion's share." These can only be eradicated by persistent pulling and burning.

Insect enemies are the fruit worm—very similar to our codling worm—which sometimes does very considerable damage, but which can be kept well in check by early and perfect flowing; also the tip worm, which works on the tender points of the vine and thus destroys the fruit buds for the following season. Their damage is usually trifling.

The soil of these marshes is peat, varying from 6 inches to 3 feet, resting on pure sand,—probably underland—at depths varying from 6 to 20 feet, by sand rock.

The country is very level and the water is all from the rain and snow, held back for weeks and months in its course to the streams by the deep moss, and spruce, and tamarac swamps.

Water thus gathered and held is generally believed to better meet the wants of the vines than from springs or running streams.

Scalping and planting has in some instances been successfully done; also planting on very sandy soil with but little peat, and not naturally submerged, but this has only been successful when water could be introduced in sufficient quantities

to perfectly give the necessary winter flow, and maintain a good degree of summer moisture. All such experiments should never involve much outlay until first tried in a small way and proved to be thoroughly practical.

Where the natural conditions are favorable, cranberry culture will not only pay, but in many instances pay *very liberally*.

Fields of 200 bushels per acre are frequent and unquestioned, and where the yield is 25 bushels and upward they always represent a net dollar per bushel as they lay on the marsh, provided they are gathered without frost injury.

The amusement referred to has been from the study of human nature as presented on the cranberry fields in the busy picking season; 500 to 800 pickers in one gang, drawn from every nationality this side of China, clad in cast off clothing representing the fashions of the last twenty years. All earnestly working, yet brimming full of fun and jollity; filling out the evenings with songs, stories, and an occasional dance; make an exhibition that can "discount" any county or State Fair in the land.

Another interesting study has been varied and constantly changing theories and management. No two men agree as to what is best, and no one man holds to the same management for a series of years The reasons assigned for this success, or remedies proposed for that failure are as varied as the human face, and often as wide of the mark as the wildest guess work.

But amid all this confusion the good old general rule holds good in this, as in all other interests, *presistent, earnest, well-directed effort* is *sure to win*. Every successful grower within my knowledge has *made* his success by earnestly working on some well defined plan; turning neither to the right or left, for one, two, or three years of adversity, but meeting and overruning any obstacle with the hand of a *master*, until success was reached, and to such, as far as I know, there have come no continued failures.

J. S. STICKNEY,
Wauwatosa, Wis.

COMMITTEE OF AWARDS REPORTED AS FOLLOWS :

VEGETABLES.

O. Gibbs, Jr.—
1st premium on Early Potatoes..... $2.00
1st prem. on White Globe Onions..... 1.00
Wm. S. Arnold—
1st prem. on Late Potatoes..... 2.00
Underwood and Emery—
1st prem. on Sweet Potatoes..... 2.00
Hiram Webster—
1st prem. on Wax Beans..... 1.00
1st prem. on Table Beets..... 1.00
O. Gibbs, Jr.—
2nd prem. on Display Potatoes..... 3.00
Wm. Arnold—
1st prem. on Dent Corn..... 2.00

Chas Gould—
1st prem. on Display Potatoes. 5.00
Grannis and Wilson—
1st prem. on Syrup..... 3.00
D. G. Heggie—
1st prem. on Yellow Onions..... 1.00
1st prem. on Red Onions..... 1.00
1st prem. on Tomatoes..... 1.00
1st prem. on Hubbard Squash..... 1.00
1st prem. on Large Squash..... 1.00
Edwin C. Eaton—
1st prem. on Cauliflower..... 1.00
1st prem. on Cabbage..... 1.00
1st prem. on Celery..... 1 00
1st prem. on Hard Spring Wheat..... 2.00

FLOWERS.

Maggie Gibbs—
1st prem Floral Designs..... $2 00
2nd prem. Display Flowers.....
Mrs. H. B. Sargeant—
1st prem. Verbenas..... 1.00
1st prem. Pansies..... 1.00
2nd prem. Round Bouquet..... 1.00
1st prem. Flat Bouquet..... 2.00
1st prem. Display Flowers.....
S. S. Workman—
1st prem. Round Bouquet..... 2.00
2nd prem. Flat Bouquet..... 1.00
Mrs. D. G. Heggie—
2nd prem. Pansies..... 50

FRUIT.

Underwood and Emery—
1st prem. Fameuse Apple..... 2.00
1st prem. Orange Crab..... 1.00
Ist prem. Whitney Crab..... 1.00
2nd prem. Beachers Sweet Crab..... 50
1st prem. Weaver Plum..... 2.00
1st prem. DeSoto Plum..... 2.00
1st prem. Plum not named..... 2.00
2nd prem. Deleware Grape..... 50
2nd prem. Concord Grape..... 50
O. Gibbs, Jr.—
2nd prem. Minnesota Crab..... 50
2nd prem. Dessert Crab..... 50
N. Smith—
1st prem. Wallridge Apple..... 1.00
B. B. Fetzer—
2nd prem. St. Lawrence Apple..... 50
Thomas Mateer—
1st prem. Dessert Crab..... 1.00
Mrs. Agnes Trost—
1st prem. Utter..... 1.00
Baker Harrison—
2nd prem. Utter..... 1.00
2nd prem. Variety not named, Crab..... 1.00
G. A. Cook—
1st prem. St. Lawrence..... 1.00
Collins Pratt—
1st prem. Display Apples, —Underwood & Emery prize..... 10.00
2nd prem. Haas..... 50
1st prem. Wealthy..... 2.00

1st prem. Duchess	2.00
2nd prem. Orange Crab	50
1st prem Delaware Grape	2.00
2nd prem. Janesville Grape	1.00
S. Hazlett—	
2nd prem. Seedling Apple	1.00
Wm. Forster—	
1st prem. Seedling Apple	2.00
D. K. Michener—	
1st prem. Long Keeping Apple	1.00
W. E. Brimhall—	
1st prem. Tetofsky Apple	2.00
1st prem. Virginia Crab	1.00
S. S. Workman—	
1st prem. Display Grapes—Underwood & Emery prize	10.00
2nd prem. Concord Grapes	1.00
1st prem. Agawam Grapes	2.00
2nd prem. Clinton Grapes	1.00
George H. Nichols—	
1st prem. Concord Grapes	2.00
D. G. Heggie—	
1st prem. Display of Hybrids—Underwood & Emery prize	10.00
2nd prem. Duchess Apple	1.00
2nd prem. Wealthy Apple	1.00
1st prem. Beachers Sweet Crab	1.00
1st prem. Minnesota Crab	1.00
1st prem. Early Strawberry Crab	1.00
1st prem. Conical Crab	1.00

The thanks of the society were tendered to the citizens of Lake City for the cordial hospitalities enjoyed by the visiting members during the meeting; to Oliver Gibbs, Jr , Superintendent, for his services in the large array of exhibits and the fine arrangement of the several departments; and to the Chicago, St. Paul & Milwakuee Railroad Company for its reduction of fares to the members coming and returning by its route.

The formal proceedings were then closed with a few well timed remarks from President Harris, the meeting being unanimously voted a success.

PROCEEDINGS

OF THE

WINTER MEETING AT MINNEAPOLIS,

MONDAY, TUESDAY AND WEDNESDAY.

JANUARY 16. 17 AND 18, 1882.

PROGRAMME.

MONDAY, JANUARY 16, —2 P. M.

1. Opening exercises.
2. Address by the President, Hon. J. S. Harris, of LaCrescent.
3. Appointing Committees.
4. Future of Apple Culture—E. Wilcox, LaCrosse.
5. Questions.

MONDAY EVENING.

1. Strawberry Culture—Isaac Fawcett, Minneapolis.
2. Fall or Spring delivery of trees and plants—M. Pearce, Minneapolis.
3. Cultivation of the Cyclamen—James Bowen, Minneapolis.
4. Raising new Strawberries from Seed—M. Crawford, Cuyahoga Falls, O.
5. Questions.

TUESDAY MORNING.

1. Report of Committee on Seedling Apples.
2. Report of Committee on Fall meeting at Lake City.
3. Report of Committee on Legislation.
4. Report of Committee on Experimental Fruit Farm.
5. Report of General Fruit Committee.

TUESDAY AFTERNOON.

1. Apple Tree Blossoms—George P. Peffer, Pewaukee, Wis.
2. Cultivation of Shrubs and Ferns—Mrs. C. O. Van Cleve, Minneapolis.
3. Evergreens for the Prairies—G. W. Fuller, Litchfield.
4. Plums—J. M. Underwood, Lake City.
5. Questions.

TUESDAY EVENING.

1. Wild Fruits of Minnesota—Col. J. H. Stevens, Minneapolis.
2. Tulips and other hardy Flowers—Mrs. J. M. Underwood, Lake City.
3. Spur Pruning Grape Vines—C. H. Greenman, Dover Center.
4. Domestic Fruits—A. W. Sias, Rochester.
5. Questions.

WEDNESDAY MORNING.

1. The importance of Experiments in producing hardy Apples from seed—F. K. Phœnix, Delevan, Wisconsin.
2. Timber Culture—S. M. Emery, Lake City.
3. Reports of Secretary and Treasurer.
4. Election of officers by ballot, without nomination.
5. Appointing Committees.

WEDNESDAY AFTERNOON.

1. Summer Cultivation and Winter Protection of Orchards—J. T Grimes, Minneapolis.
2. Commercial Orcharding—E. B. Jordan, Rochester.
3. Report of Delegate to Wisconsin Horticultural Society—C. H. Greenman, Dover Center.
4. Blight—Geo. P. Peffer, Pewaukee, Wis.
5. Questions.

WEDNESDAY EVENING.

1. Report of Committees on Current Meeting.
2. Report of Committees of Award.
3. Miscellaneous Business—Locating next Annual Meeting, &c.
4. Questions.

PREMIUM LIST.

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5 Specimens to constitute a Plate.

Plate—	Wealthy	1st Prem.	$2.00	2d Prem.	$1.00
"	Walbridge	1st "	2.00	2d "	1.00
"	Utters Red	1st "	2.00	2d "	1.00
"	Haas	1st "	2.00	2d "	1.00
"	Fameuse	1st "	2.00	2d "	1.00
"	Seedling Apples not before exhibited	1st "	5.00	2d "	3.00
"	Variety not named	1st "	2.00	2d "	1.00
"	Whitney's No. 20	1st "	2.00	2d "	1.00
"	Conical	1st "	2.00	2d "	1.00
"	Powers Large Red	1st "	2.00	2d "	1.00
"	Virginia	1st "	2.00	2d "	1.00
"	Minnesota	1st "	2.00	2d "	1.00
"	Orange	1st "	2.00	2d "	1.00
"	Hybrid not named	1st "	2.00	2d "	1.00
"	Desert Hybrid	1st "	2.00	2d "	1.00
"	Long Keeping Hybrid	1st "	2.00	2d "	1.00

GRAPES.

Best Plate Long Keeping	1st Prem. $5.00	2d Prem. $3.00	3d Prem. $2.00

FLOWERS AND PLANTS.

Best Display Plants in bloom	$10.00
2d " " "	7.00
3d " " "	5.00
Best Single Specimen Plant	3.00
2d " " "	2.00
3d " " "	1.00
Best Ornamental Foliage Plants	5.00
2d " " "	3.00

CUT FLOWERS.

Best Floral Design	$10.00
2d " "	5 00
Best Round Bouquet	2.00
2d " "	1.00
Best Flat "	2.00
2d " "	1.00
Best Display Roses	3.00
2d " "	2.00
Best " Carnation Pinks	3.00
2d " " "	2.00
Best Display Lantanas	3.00
2d " "	2.00

VEGETABLES.

Best Peck Navy Beans	$2.00	2d best	$1.00
Best Peck Wax Beans	2.00	2d best	1.00
Best Peck Mangel Wurzel Beets	2.00	2d best	1 00
Best Peck Table Beets	2.00	2d best	1.00
Best 3 Cabbage	2.00	2d best	1.00
Best 3 Celery	2.00	2d best	1.00
Best Peck Red Onions	2.00	2d best	1.00
Best Peck Yellow Onions	2.00	2d best	1.00
Best Peck White Onions	2.00	2d best	1.00
Best 3 Hubbard Squash	2 00	2d best	1.00
Best Display Potatoes $5.00; 2d best	3.00	3d best	1.00
Best Peck Early Potatoes	2 00	2d best	1.00
Best Peck Late Potatoes	2.00	2d best	1 00
Best Peck Sweet Potatoes	2 00	2d best	1.00
Best Peck Cranberries	2.00	2d best	1.00

CANNED FRUITS, &c.

Best Display Minnesota-grown Canned Fruits	$5.00	2d best	$3.00
Best Sample Currant Jelly	2 00	2d best	1 00
Best Sample Crab-apple Jelly	2.00	2d best	1.00
Best Sample Grape Jelly	2.00	2d best	1.00
Best Sample Canned Strawberries	2.00	2d best	1.00
Best Sample Canned Raspberries	2.00	2d best	1.00
Best Sample Pickles	2.00	2d best	1.00

MONDAY, JANUARY 16, 1882,—2 P. M.

Pursuant to notice, the Annual Meeting of the Minnesota State Horticultural Society, convened in the new Board of Trade rooms, Minneapolis, Minn., at the appointed time. President J. S. Harris in the chair. Mayor Rand, who was unavoidably absent, was represented by Col. J. H. Stevens, who welcomed the Society to Minneapolis as follows:

ADDRESS OF WELCOME.

Mr. President, Ladies and Gentlemen of the Society: In behalf of Mayor Rand, who, I regret to say, is confined to his home to-day by illness, I bid you a cordial welcome to our city, the citizens of which recognize the noble efforts you have made and demonstrated in the all-important industry of horticulture. They have always lent a friendly hand to your society, and they earnestly wish you success in your laudable work. It affords me much pleasure to extend to you their hospitality during your deliberations, in which they feel such a deep and lasting interest.

The president of the society, J. S. Harris, of La Crescent, responded to Col. Stevens as follows:

"Agriculture has been styled the noblest occupation of man. But for it the human family would be a race of barbarians subsisting by pillage, and warring upon every other species. There would have been no cities, no beautiful habitations of man, no great steamers plying the oceans and carrying our produce throughout the world, no railroads binding the ends of the continent together in bands of steel that cannot be broken; the lightning would not have been tamed and made the servant of man throughout the civilized world. Horticulture is the poetry of agriculture. It not only makes up a portion of our commercial prosperity, as does agriculture; it beautifies our homes, gives us innumerable luxuries, and conduces to the growth of taste, and refinement and intelligence. One who loves horticulture cannot be a very bad man.

We love Minneapolis, and are heartily glad to accept your cordial welcome. Many times before have you extended to us your hospitality, and we feel that your constant cordiality is one of the causes of our prosperity. Again we thank you for your welcome.

At the conclusion of the above response President Harris read his opening address as follows:

PRESIDENT HARRIS' ADDRESS.

Members and Friends of the Minnesota State Horticultural Society: Once more we have assembled in convention in this beautiful city, the Queen City of the Northwest, under circumstances auspicious for a pleasant and profitable meeting. A beneficent Providence has smiled upon our State and prospered her various industries, and all the people have abundant cause for entering upon the new year with rejoicing. The hateful locust has not again devastated our fields, and no pestilence has stalked abroad striking terror to the heart and leaving a trail of death and sorrow in its course; but our flocks and herds have brought their increase and the earth has yielded up her fruits to the tillers of the soil so that we have enough an

to spare. Never in our history has the prospect been brighter or the people as a whole more prosperous than to-day.

The State Horticultural Society has also reached and occupies an honorable position among the institutions of the state, and is now where it can make its influence felt for usefulness. Our membership is larger than ever before and is comprised of the most zealous and enterprising men of the state, many of them of large experience and capable of enduring much self-denial if, as a result, they can see our interest advanced thereby. Our state has already a world-wide fame for the healthiness of its climate, the fertility of its soil, and for the intelligence, enterprise and morality of its people. We have the Mississippi river and the great lakes, the one giving us a highway to the ocean, the other water communication with the older states of the East. And we have a system of railroads, managed and equipped in the best possible style, which affords ample facilities for travel and commerce and a market for almost every farmer at his door. The new industry of cane growing promises soon to relieve us of the great expense of importing our sugar, which is so essential to good living, and perhaps yield us a revenue. And but two obstacles are in the way of our state becoming one of the best for the habitation of man that the sun ever shone upon.

We are here for the transaction of business of great moment to the state. The obstacles are such as doubtless can be removed or remedied, and it is the mission of this society to do it.

First, we have treeless prairies over which blizzards occasionally sweep with fury, carrying with them suffering and sometimes death to man and beast, and blockading our railroads, causing enormous expense to keep them in a condition to transport the necessities of life to the hardy pioneers who are opening homes upon the frontier. The several railroad companies are deserving of praise for their almost superhuman efforts made during the last winter to keep down the blockade and carry food and fuel to those who were literally shut off from the civilized world. Had they failed, who can tell the horrors that the opening spring would have revealed? We may do very much to modify or remove this evil by giving a portion of our time to the encouragement of forestry. I am aware that in Europe and the Eastern states forestry is not classed with horticulture. But here for the present, at least, they must go hand in hand, for every one knows that forests have a favorable influence upon climate, by softening down the temperature, breaking the force of winds and somewhat charging the atmosphere with moisture. I believe that if every quarter section of prairie in Minnesota and Dakota had the shelter of a timber belt two rods wide around them, and they were checked off into squares or forty acres by like belts, and an evergreen grove of five or six acres to shelter the buildings, the land would produce better crops, the difficulty to fruit culture would be removed and there would never more be danger of snow blockades. It is our duty to encourage the planting of wind breaks and shelter belts, groves and forests in order that suitable timber may always be at hand for fuel, fencing and the manufacture of agricultural implements and furniture. Forests cannot be raised in a night but require half a century to bring them to their best. But they will commence yielding returns in fuel in five or six years, therefore it is unwise to delay their planting a single season. Thousands, of those who are carving out homes on the prairies are either young and inexperienced, or men who have all

their lives followed some other vocation than farming, and hence have but a superficial knowledge of trees, or how they should be handled. We are expected to be able to see the majestic tree in the tiny seed, and to know just how to get it out.

The least we can do for such men will be to adopt a select list of such varieties and species as will flourish in this climate and soil, and meet the present and future wants of the people, and impart such information and give such instruction as will enable every settler to grow at least sufficient to meet his own wants. The other objection made to our State, is that it is not adapted to the successful growing of fruits, and especially apples. To a certain extent this is an erroneous idea, and yet has it been so oft repeated that it has exerted a powerful influence against us. I do, and always have denied the assertion, and it is evident to every one who has attended our fairs for the past ten years, that we can and do raise many varieties of fruit of great excellence, and that we have made satisfactory progress, considering the disadvantage of having to deal with untried varieties, and being so often victimized by unscrupulous peddlers.

We have been compelled to defy public sentiment, work under disadvantages and surmount difficulties that nothing less than the enterprise and preseverance of our earlier fruit growers could have overcome. At the present time a universal interest is being manifested in the production of new varieties from seed, which is worthy of praise. The Wealthy is daily growing in popularity, and proving itself of inestimable value, not only in our own State, but in all the Northwest, New England, and Canada. Although far from being perfect, it has had the effect of encouraging experiments in the production and improving of varieties by raising seedlings. Doubtless this is the method which has given Russia and Siberia valuable varieties adapted to their climate, which I suppose to be more inclement than ours. It is nature's method, as old as creation, and which has gained in force and power through all the ages, and to natural hybridizing or cross impregnation of plants we are indebted for every luscious fruit and many of our beautiful flowers. Whether artificial impregnation of plants was known and practiced by the ancients, I am unable to say; but if so it became one of the lost arts to be re-discovered in our age, and even now we but imperfectly understand the laws govering reproduction; but from the rapid improvement in fruits we have witnessed in the last score of years, we have reason to believe that we have only to become familiar with their operation to be able to produce some of the grandest results the world has ever seen. We have at our hand what would seem to be the best material to operate with. Some of the Siberians have been already so improved in size and quality that were they not so subject to blight, and had long keeping qualities, they would be about all that could be desired; and many of the Russians are of large size and good appearance and fair quality, perfectly hardy and only objectionable because so perishable. Natural crossings of these with our common late-keeping varieties, while not impossible, would be a slow and uncertain process, owing to difference of time of coming into bloom; but when skill and science takes them in hand we might reasonably expect that rapid improvement will follow. In the past we have devoted the major portion of the time in our meetings to the apple question; but we should bear in mind that there are other interests demanding our prompt consideration. I have already alluded to forestry. As it is so important an assistant to successful horticulture, I recommend that you give it a part of your attention, and every encour-

agement within your power; for every wind break, successfully established upon our western border and in Dakota, will do something toward ameliorating the climate, and I have not a doubt will tend to lessen the depredations of insects.

Ornamental tree planting is a part of the legitimate work of the agriculturalist. In this, my friends, go where you will, you may find some missionary work that ought to be done. If you doubt it, pay the grounds of our State university and our normal schools a visit and take a note of what they are, and what they might become if they were artistically laid out and planted with ornamental trees, shrubs and flowers. Go to the country school houses out on the prairies,—yes and in the timber, too. Having no pretensions to architecture or convenience more than the ordinary farm barn, their surroundings harmonize perfectly. Usually fenced off from the corner of some grainfield, the name "Bleak House" would be appropriate, for there is not a bush or tree to give cooling shade in summer or break the force of winds in the winter. Our stock-breeders would blush to stable their thoroughbreds in such a place. Cheerless they are, yet we expect that our farmers' sons and daughters will there receive an education that will enable them to become good citizens and adorn every station in life. Can we expect that they will acqure a love for the country and the farm? The country school house ought to be the most delightful place on God's earth. The grounds instead of being a fourth acre, should comprise four to six acres, beautifully laid off, having its play-ground, grass lawns, flower beds, and evergreen bowers. Is there one here present who can look back to a home of his childhood that was artistic, convenient and neat; where there was music, good books, and good cheer inside to help while away the time, and outside heavy laden orchards, beautiful trees, garden and lawn; who does not believe that he *is* a nobler man than if his childhood and youth had been restricted to a place directly the opposite? It is a fact that the character of men will be influenced, more or less, by the association and surroundings of their childhood. I trust that this matter will receive your early attention, and that you will be able to devise means to hasten the time when every school house in the State shall become a thing of beauty, the joy and pride of our people.

Another field open for a little missionary work is the beautifying of country cemeteries. Many of them which have come under my observation would convey the idea that our rural districts were inhabited by a people not over far advanced in civilization. It is lamentable to have the cemetery carry the impression that when our dead are buried out of sight, they are also forgotten. In the earliest settlement of the country, these things may be excusable; but with the wealth, intelligence and refinement found everywhere at the present time no excuse is valid Gentlemen, if possible, start a reform in this direction. "A littl eleaven" will in time "leaven the whole lump."

Among the events of the year of special interest to us were the Minnesota State Fair, the fall meeting and fair of this society at Lake City, the meeting of the Mississippi Valley Horticultural Society and the meeting of the American Pomological Society.

(See report of horticulture at the State Fair.) The fair was held in the midst of a rainy season without parallel in the history of the State. This had a tendency to deplete the attendance and cut off other sources of revenue, and to deter many from making exhibits. The weather was such as to force the visitors to re-

main most of the time within the buildings, thus rendering it very inconvenient for exhibitors to arrange their displays in a tasty manner, and doubtless the horticultural exhibit was much inferior to what it would have been under different circumstances. Again the season had not been a favorable one for most varieties of fruit and especially apples. The crop was unusually light, and, owing to the extreme heat, and drought, and depredations of insects, not up to the usual standard of excellence. Nevertheless, the fruit was so ably managed as to make it a success and the horticultural department was not behind any other, and was a credit to the State Horticultural Society and to all who contributed to the exhibit. The premiums awarded have been paid in full.

The fall meeting and fair at Lake City was a very pleasant occasion. Owing to the rain and unpleasant weather the country roads were nearly impassable, and the attendance of visitors from outside the city was light.

The display of fruits and vegetables was fine. Great credit is due to the committee who had the arrangements of the meeting in charge and to the citizens of Lake City for the hospitality extended to the members. For particulars see official reports After considering that apples and the late fruit are exhibited at the State and other fairs and pretty freely discussed at the winter meeting, I am of the opinion that hereafter we should appoint our extra meeting in the season of small or summer fruits, and offer suitable premiums to insure a good exhibition.

The meeting of the Mississippi Valley Horticultural Society was held at Cincinnati, Ohio, commencing September 6, and the eighteenth biennial session of the American Pomological Society occurred at Boston, Massachusetts, September 14, 15, and 16. Our society was not represented at either of the meetings. Upon receiving official notice of them I immediately addressed a circular letter to our secretary and each member of the executive committee, and in reply they each expressed the opinion that in view of the shortness and quality of our fruit crop, it would be impossible to make a creditable showing at either of the meetings, and that under existing circumstances it would not be expedient for us to defray the expenses of a delegate to either of them. No report of the Mississippi Valley Society meeting has come to my notice, but I have the assurance that the Pomological meeting was a success and the most interesting, in some respects, of any year held, for which I am heartily glad. This membership comprises the best horticultural talent of America. It has completed thirty-three years of its existence and it was the first national association for the promotion of pomology of which history gives any account. It is not only national in extent, but American as well, for it also embraces the provinces of British America. It has vice-presidents and fruit committees in more than fifty States, Territories and Provinces, who give reports upon the fruits specially adapted to their respective districts, and it is doing a good work in encouraging the cultivation and improvement of the choicest varieties of fruit in every portion of our great country. Its sessions have been distributed among the larger cities of the United States and I think that a little effort on our part might secure one in this State. The venerable Marshall P. Wilder opened the meeting with an address which (though he is 83 years old), shows that he has lost but little of the vigor of his youth and that he stands first among the horticulturists of the age, in view of which I would recommend that he be elected a life member of our society, and that the leading portion of his last address be

published in the next volume of our transaction. I would like to dwell longer upon this subject but so many others present themselves that I must hasten on.

It seems to me that the time has arrived when we should be enjoying the most fraternal relations with the State societies, and especially those of Wisconsin and Iowa, whose interests are so nearly identical with our own. I have no doubt that an arrangement may be perfected for the exchange of transactions, by which every member of the three societies shall be supplied with copies of each, and I trust the annual meeting will provide for sending a delegate to represent us in the annual meetings of those States. Another matter that occurs to me, is that we are feeling the want of a hand book of fruit culture, adapted to the peculiarities of the soil, climate, etc , of the States of Wisconsin, Northern Iowa, Minnesota and Dakota. It should be something of the style of Downing's "Fruits and Fruit Trees of America." It should describe the fruits, both native and domestic, in successful cultivation here, give accurate descriptions of our wild fruits, their value as articles of human food or commerce, and the best methods of cultivating and improving them, and also accurate descriptions of the new varieties of the old and well known classes of fruits. The preparation of soil, planting, pruning and treatment requisite to success in the climate should, of course, be a leading characteristic of the book. In order to bring this subject into notice and sooner bring about its consummation, I would recommend the appointment of a committee to correspond with like committees of those states, to report at a future meeting.

Since the adjournment of our last annual meeting, the State legislature has granted us an annual appropriation of $1,000. This sum if judiciously used, may prove of great benefit to the society and to the people of the State at large. It remains with you at this meeting to say what disposition shall be made of it. See to it that its disposition shall reflect credit upon us, accomplish the object for which it is designed, and secure for us the confidence of the tax-payers of the State. I am in favor of setting aside a portion of the amount to be used only in the payment of premiums to be offered to encourage the growing of fruits from seeds, the offers to be so guarded as to leave no chance for imposition, and I think that we ought, without delay, to create a committee to perfect a premium list and make rules to govern it. I would say $500 for the best long-keeping variety, as hardy as Duchess or Siberians, of good quality, fine appearance, medium to large in size, to keep until May; $400 for second best, same rules to govern; $300 for third best; $200 for best winter sweet apples; $100 for a grape as hardy as the Concord, as good or better in appearance and quality, two weeks earlier and that will keep well into winter. If any or all of these were now originated, it would require five more years to give them the requisite test and probably $200 per year would meet the demand.

I am also in favor of establishing two or more experimental stations under the direct supervision of the society where every new candidate for favor may be tested before thrown upon the market or given a place on our fruit lists. I think that we have enterprising members who would cheerfully manage such grounds if stocks and scions were furnished them free of cost. We have a standing seedling fruit committee. It should be a part of their duty to visit and examine seedling trees that are reported as promising and secure scions of such as are deemed of value, and their actual expenses ought to be defrayed from our appropriation.

Our society has now become so large that the duties of the secretary are a heavy

draft upon his time, and he should receive a salary. It is also important that the executive committee hold one or two meetings between our annual sessions, and in order to secure their attendance it will be necessary to defray their traveling expenses or elect all of our officers near one central locality. I trust that these matters will receive your careful attention before our final adjournment.

There is one other matter, already too long delayed, which I wish to present to your notice. The legislature of 1873 passed an act providing for the publication of the transactions of the annual meeting of that year, and a condensed history of the society from the date of its organization The society at the time was virtually bankrupt, and the act made no provision for collecting together the statistics and rewriting the whole matter and getting it ready for the State printer. Hon. R. J. Mendenhall and Wyman Elliott advanced for the purpose $100 each. Nine years have since passed; they have never spoken of the transaction, and I have no knowledge that they have ever received in return even a vote of thanks from this society. It is high time that they should receive some testimonial of respect from us, and that some action be taken for liquidating the debt. I do not think we have a legal right to use any portion of our state appropriation for the purpose, but we can set aside our receipts for annual dues and appropriate what money remains in the treasury for its settlement. Some of the essays published in our transactions would be much more useful if illustrated. I would recommend you to authorize $25 to $50 to be expended in providing cuts for that purpose.

In conclusion, gentlemen, permit me to tender my sincere thanks for the great honor you conferred upon me in electing me to the high position of president of the Minnesota State Horticultural Society. I am fully conscious that I have not the ability to fill the position as it ought to be filled. However, in this, I think you will bear me witness that in the past, I have done what I could for its prosperity. This I will ask of you, that you will believe me when I say that I have faith in Minnesota and in this society. As far as possible, overlook my shortcomings and cover my faults with the broad mantle of charity. May the society become as a light-house set upon a high hill, sending its bright rays over the prairies of Minnesota and Dakota, growing stronger and brighter until the fruits of our orchards and vineyards shall be shipped by car loads, and until beauty and comfort shall rest in every home. May all your meetings be harmonious, and every member return to his home better fitted and ready to grapple with the difficult questions that may arise, and while my life is spared my earnest prayer will be for the perpetuation of our society and the diffusion of its blessings upon all mankind.

At the close of the President's address, the following committees on current meeting were appointed:

ON PRESIDENT'S ADDRESS.

U. S. Holllister. S. M. Emery.

J. H. Stevens.

COMMITTEE OF AWARDS—(FRUIT.)

J. F. Grimes. F. G. Gould.

M. Pearce.

COMMITTEE OF AWARDS—(FLOWERS.)

Mrs. Underwood. Mrs. Emery.

Mrs. Gould.

COMMITTEE OF AWARDS—(VEGETABLES.)

Geo. W. Fuller. Wm. Fawcett.

D. G. Heggie.

COMMITTEE ON FINAL RESOLUTIONS.

S. M. Emery. J. H. Stevens.

G. W. Fuller.

The following paper, by E. Wilcox, of La Crrosse, Wis., was read by the Secretary:

THE FUTURE OF APPLE CULTURE IN WISCONSIN AND MINNESOTA.

I am so often met with the saying, "Can't raise apples here," that I am impelled to give a little history of what has transpired, mainly in my day and my own recollections of them; it will show how little we know of the future, and how chary we ought to be in our predictions.

Sixty years ago or thereabout the only stove in use was the open Franklin, used for warmth only; all cooking was done in an open fire-place with trammel, pots and kettles; baking was done in a bake-kettle, or oven. The flax break and hatchel, prepared the flax for the little wheel and the tow for the big wheel. The cloth was woven in the hand loom. The garments for all were made by the women folks of the family. The land was plowed with the bull plow with a steel point, wooden mould-board, one upright handle with a hole bored through it and a pin put in. The grain was sown by hand and cut with sickle or cradle. The grass was cut with the scythe and got together with the hand rake. Threshing was done with the flail, at the rate of about ten bushels a day, and wages were three York shillings. The pay, perhaps would be in rye, at ten shillings per bushel. Wages in summer, hoeing corn, (we used to hoe in those days) four shillings, in harvest eight shillings. Rye and Indian corn were our daily bread. Wheat bread was seldom seen on the tables of even the well-to-do. The poor man could be imprisoned for debt, but could not vote. The old stage coach was the usual way to travel. I have often waited for them going from Albany to Saratoga with the names of the proprietors on each one, Young & Walbridge or Rice & Baker, with an eager curiosity as boys of the present day collect at the depot to see the iron horse and train of cars come in. The first steamboat ascended the Hudson in 1807, five years before my birth. In 1817 the Erie canal was commenced. I have heard people say, "I only want to live to see the Erie canal completed;" in 1825 this was done, and this is the way they celebrated the event: Cannon were placed at proper distances from Buffalo to Albany, and when the report of the one at Buffalo was heard at the next station east, the one there was fired, and so on to Albany. It was a cold, wintry day in November. I suffered much for my youthful curiosity. Bear with me a little longer. I am coming to the

apple question soon, but want to impress upon the minds of the doubtful that you may be mistaken, as many great men have been before you. I remember riding in the cars, when drawn by horses, from Saratoga to Schenectady. Col. Sam. Young, a great statesman in his day, candidate for governor, etc., was kept waiting some time for the horse train; when he got on board he began to complain about the folly of railroads. Why, said he, if I had taken my own team I could have gone to Albany and done my business. He could not see sixty miles an hour in the future for the iron horse no more than the croakers can apples in the future for Minnesota and Wisconsin. I find in the history of Wisconsin in the war of the rebellion, in substance the following: There had been two unsuccessful assaults made on Marcy's Heights, Fredericksburg. Col. Allen, of the Fifth Wisconsin, and some other regiments were ordered to make another attempt. In his short speech to the men, he said: "You think you can't take them, but you can. You will advance until you get the word halt; you will not get that word." Let me say after a residence of nearly forty years in Wisconsin, you of little faith will not get the word halt from the fanatics engaged in this fruit war, but the word will be right on until you succeed as Col. Allen's brigade did at Fredricksburg. Let us reason a little: When the wheat blighted about 1850 in Wisconsin, so that the old hedgerow was nearly a failure, the farmers changed their seed and sowed the Canada club, which was a success. We have changed from Rhode Island Greening apple to Duchess of Oldenburg; the success is assured as much as the change in wheat. Again, the potatoes rotted so badly twenty-five or thirty years ago that we had to fall back on beans. Rev. Mr. Goodrich, a fanatic at Utica, N. Y., began experimenting by growing from the potato ball. Others took it up until now there is little complaint about rot. Peter M. Gideon has from seed produced the Wealthy apple, which promises to be as great a success as the Seedling potatoes. J. S. Harris has experimented in the same way with a prospect of success, trees grown by us from scions of his seedlings having stood the last two winters as well or better than some of the crab apples. I have not done yet with that class who say, "Can't grow apples here." If Satan had the same opportunity to harm the people of the Northwest that he had with our first parents in the Garden of Eden, do you think he would call the attention of the Eve of the present day to an apple? Far from it. He would tell her to dig in the ground for the potato. Let us see. When the Colorado bug made his appearance there was war declared at once. Men, women and children turned out and destroyed them, both old and young, even the eggs, and that, too, at the risk of life. The papers published numerous cases of death, where women had eaten their meals without washing their hands after picking the bugs. Now turn your attention for a moment to the apple and see how those same persons regard that. Their trees are in the sod without protection or care. The cattle, horses, sheep, rabbits, and mice all have full swing. The coddling moth, tent caterpillar, canker worm and curculio are not disturbed in their destructive work; yet still we hear that old story that we cannot grow apples here. I tell you I am right. That old serpent, the devil, has the reputation of being smart. He would never try the Northwestern man or woman with an apple to tempt them to trespass a divine command. I confess I do not understand this. People let a smooth-tongued tree peddler, representing some nursery in the State of New York, Ohio or Canada, go for them, and they will buy the sand cherry of the Mississippi bottoms at $1.50 each, if it be called "Utah Hybrid" cherry, or Box Elder five or six feet, labeled "Burgundy Maple," at $1.50.

I have met some of their victims who would chuckle and laugh over their purchase, and tell how gentlemanly they were, and how nicely they did it, while others were so mad that they threatened to set the dog on or shoot the next man who asked them to buy trees. Thus the nurseryman who has something really valuable and at low prices is left with it on his hands after years of toil to grow it. Perhaps he has also paid a tax on what he is compelled to consign to the brush pile. Now if Queen Pomona has a paradise for honest, superanuated nurserymen who have come through great tribulation, persecution and want in this Northwest, where their work is appreciated, I would like to obtain a passport and seek admission.

Well, what has been done to make fruit a success in the Northwest. I will only give a hasty sketch on the apple. Only the early settlers introduced the kinds they had grown up with at the East. After some years trial these were found to be a failure, and other kinds were tried and failed. Then for some time the Wisconsin Horticultural Society recommended five kinds on which there was no opposition. These were Red Astrachan, Duchess, Fameuse, Tallman's Sweet, and Golden Russet. Now only the Duchess will stand the test except in favorable locations and soils, and to the Duchess add the Tetofski and Wealthy. A small list, says the faithless. True, but will you remember that you being a farmer, can try a new farm implement, and in a few hours or days at most can fully test its value. Not so with an apple tree. That, it will take many years to test its hardiness and fruitfulness, and when one has been found like one I am acquainted with, twenty-five years old, and has borne twenty bushels of good apples in a year without injury from cold or heat, yet the nearest neighbors to this tree will not buy good trees propagated from it. Is it any wonder if slow progress is made by Northwestern nurserymen? This tree is only one among many in Wisconsin and Minnesota which have proved their ability to stand this climate. There is one in Pine River Valley, Richland county, Wis., which, it is claimed, has passed through more than one winter when the mercury froze where it stands. There are a number in Waupacca county, Wis., said to be equally hardy. I know of a number near me in both Minnesota and Wisconsin, though not quite as old as twenty-five years, yet giving good promise to outlive some of those whose cry is, "You can't grow apples here." To these may be added hundreds imported from Russia, and lastly the crab-apples and hybrids, about the hardiness of which there is no doubt. Many of them are large enough and good enough for first-class dessert apples. Some will keep until winter. Trees are nearly free from blight. I am satisfied with the above showing.

The secretary was instructed to get from Mr. Wilcox, the name and history of the hardy and productive apple referred to.

Mr. Gibbs stated that he had seen the fruit—as shown by Mr. Wilcox—medium size, good flavor and good keeper for a fall apple. The original tree stands on low ground, near a marsh, in what was thought to be a very unfavorable location. It is known as Rhode's Seedling.

The following question discussed: Have we a hardy apple adapted to Minnesota climate?

Mr. Underwood did not know a single apple or crab, but was injured

by the severe cold of 1880. He wished it understood that the degree of injury varied, and that some trees, though injured, were still worth planting.

The Duchess, though injured in some localities, escaped in others. Said the Wealthy proved one of the hardiest.

In further discussion of this question, Mr. Gibbs said:

If by the question is meant, whether we have a variety hardy enough to endure both our summer blights and our occasional sudden changes from extremes of heat and cold, and long periods of low temperature, in our winter season, without injury, in the sense that our common forest trees are hardy, it must be answered in the negative, at least so far as general experience extends; but if it is meant whether we have a variety that with reasonable protection, is sufficiently hardy to supply us with fruit till we can find something more hardy or perfectly hardy, then we can answer in the negative, and point to our Duchess and Wealthy, and claim truthfully that they are profitable varieties to plant. It is common to hear it said that the Wealthy and Duchess are as hardy as the bur oaks and cottonwoods, yet every nursery man and every orchardist of much experience knows to the contrary. The Wealthy will take the blight from the blighting crabs, especially from the transcendent, if growing near them; both Duchess and Wealthy are liable to "sunscald" on the southerly sides if not protected or growing on very cool, airy, northern slopes, and both of them in such winters as 1873 and 1879-80 are hurt all over and all through, though not so badly, unless root-killed, which is rare, as to prevent recovery, or even in the bearing sizes, to destroy the next years crop. In my opinion, the best service we, as a society can do the people of our State at present is, to admit the tenderness of even our hardiest sorts, to preach the necessity of constant protection of our fruit trees, showing if we can what the best methods of protection are; and the next best we can do, is stimulate and encourage the production of new seedlings by processes that shall give a gradually increasing hardiness from generation to generation, till we reach in time, that great desideratum—"a pomology of our own."

MONDAY EVENING.

Paper by Isaac Fawcett, of Minneapolis.

STRAWBERRY CULTURE.

The published transactions, as well as the various horticultural periodicals and fruit books of any pretensions, are replete with careful and accurate information about planting, cultivating and marketing the strawberry. I therefore trust I am

justified in mainly passing those topics by; and in calling attention to how largely we are as yet dependent upon natural causes for our finest crop of this favorable fruit; by this, not disparaging in the least good culture, but endeavoring to find out how we may extend it, and best supplement or modify these forces of nature when absent.

Strawberry yields are extremely variable in quantity and quality of fruit, during different seasons in the same place, under almost precisely the same treatment. Thus it may happen after we have grown an enormous crop of very fine fruit, we flatter ourselves that we know precisely how to duplicate it. And following up the same mode of preparation of soil, planting, and cultivation, we are sorely disappointed at last in securing only an ordinary or even poor crop.

The finest yields are undoubtedly the result of a combination of every favorable condition of soil, varieties, cultivation, location, moisture, and temperature. Yet I have seen some remarkable ones when soil, varieties, and cultivation were all apparently inferior, leaving, perhaps, the two combined influences of proper moisture and temperature through the entire season to account for them. We are all familiar with the reverse, when by lack of moisture or extremes of temperature, other conditions having been good, poor crops followed.

Marking well these facts, may we not infer that so far as is possible, we must select a soil and location that will naturally resist these untoward conditions of nature, to that end also applying the most intelligent methods of culture and management?

One of our most eminent horticulturists, being asked what special fertilizers and in what order he would recommend them for the strawberry, replied, first, water, and second, water again. Within reasonable bounds, this accords nearly with my own experience. Where irrigation is attainable, I do not doubt it could be used to good advantage and profit, even in districts where the average rainfall is considered sufficient.

During a severe drouth occurring at New Albany, Ind., just as strawberries were beginning to ripen, I irrigated one and a half acres of Charles Downing. The plants were in matted row form, and had been covered for the winter with straw, in the spring a part of it being drawn into the paths, the plants pushing through the remainder. The drouth was so severe that even with this mulch the foliage was wilting, and some of the fruit scalding in the sun. Two teams were employed hauling water in large hogsheads from a stream three fourths of a mile distant, and four large sprinklers in the hands of as many men, distributed the water profusely on the rows of plants. One half of the patch was gone over each alternate day.

From the time of the first application of the water the plants perfectly revived, and as fine a crop of fruit as we ever gathered was the result, bringing high prices on account of the short and inferior crop in general. The expense was inconsiderable indeed, as compared with the increased quantity and quality of fruit.

Desirable as is irrigation at times, very few of us will assume the expense of preparing for its use. But to be sucsessful we must do the next best thing. So prepare the soil, cultivate and manage, as to retain and utilize all the moisture at command. I of course recognize the fact, that occasionally we have too much rain, even for the strawberry, but such is the exception.

Serious damage from drouth frequently occurs during the season the plants are set; judicious selection and preparation of soil and cultivation seem to be about our only means of obviating it. To this end the soil should naturally be moist and cool, but not wet; sufficiently fertile, and thoroughly pulverized in preparing for planting. Persistent cultivation must then be maintained, especially so as to keep a good surface mulch of finely pulverized soil.

For this purpose we prepare steel-toothed harrows, adjustable to the width of the rows, the teeth so made and set as to do the work perfectly, and passed through often enough to destroy all weeds in embryo or infancy; and after each and every rain, so soon as the ground is in condition. The best results can only be attained by keeping the plants singly in the row, or in quite narrow matted rows. This character of cultivation also modifies changes in temperature, resisting the heat of the day and the cold at night.

In this connection I will allude to the practice of winter protection, giving possibly varying results in different localities. Our experience induced us to apply it early, entirely ignoring the oft-repeated recommendation to wait until the ground was hard frozen—so soon as the plants were fairly matured, and the fruit buds well developed. Covering with straw, one or two inches in thickness over the entire surface; from two to four weeks solid freezing weather producing so far as was descernible no injury, but in all cases modifying the bad effects of the cold, dry winds prevalent at that season.

In localities where alternate freezing and thawing frequently occurs this artificial covering is practically indispensable. In the Spring, when removing a portion of this mulch from the plants, care should be taken to leave all that they will easily push up through, thickening up that already in the paths with it. For in this mulch we again have one of our chief defenses against drouth during the fruiting season.

Adverse temperature, as manifested in Spring frosts, is a source of serious loss, as it destroys the germ of the fruit in the bloom, or sometimes almost full-grown fruit, plantations in valleys and on wide stretches of table land suffering most; those on bluffs and ridges of land comparatively higher than that immediately around it often escaping the slightest injury.

Considerable bodies of water, as lakes and rivers, greatly modify temperature as well as moisture, in notable localities shielding the tender germ of the peach against winter's fiercest blast, in many other tempering the late polar waves in spring until their breath is harmless upon the tenderest flower.

These facts are of importance to everyone wishing to grow fruit of almost any kind, who has any opportunity to make choice of site, and are of great and growing moment to that large and rapidly increasing class who are dependent upon the general fruit supply; for that supply can only be adequately and regularly met by the fruit grower who knows well how to avail himself of these stepping stones to his own success.

The history of the strawberry in Minnesota, as set forth in the published transactions of this society, shows that failures are almost universally attributed to conditions of temperature, rather than to any want of intelligent cultivation.

Spring frosts have not proved so serious as winter killing of the plants, at least there are many localities almost exempt from them. Winter killing is more general and wide spread when it does occur, and calls for intelligent observation

and experiment to overcome it if possible. Some varieties have already proved hardier in this respect than others, giving promise that by extended testing of those we already have, and in the production of native seedlings a remedy may be found. Undulating or rolling land, sufficiently so to insure prompt surface drainage, has proven safer than that which is very level.

Different exposures, especially in reference to the sun, increasing or lessening the sudden transition from heat to cold, is recognized as of great importance, and certainly shows that shielding against the direct rays of the sun gives promise of the surest crop, with least danger to life of tree or plant.

In regard to the best material for and manner of applying winter covering, and whether it is of special use during the most trying ordeals, there certainly is a diversity of opinion. Yet it is a subject of the highest importance, and we anxiously await further light upon it.

I sincerely hope I have presented a matter worthy of your careful consideration and discussion, believing that if we can point out, how, by proper selection of varieties, soil and cultivation, to in the main overcome the unfavorable influences of moisture and temperature, we can readily trust to the intelligence of the average fruit grower as regards what is usually termed cultivation.

In reply to a question, Mr. Fawcett said that his soil in Indiana was a limestone clay. For a number of years, he had relied entirely on the Wilson, but later he had found the Charles Downing the most profitable.

Mr. Grimes asked which had been found most profitable, hill or row planting. Mr. Fawcett said he grew Wilson's only in rows. The Charles Downing he grew in matted rows, clipping off the runners. He had found the Kentucky and Seth Boyden a success only in hill culture. He asked the most favorable exposure, soil and protection, for the strawberry in Minnesota.

Mr. Grimes replied, that as to soil, he found dry clay land the safest. He said if the ground froze up dry, in the fall, without snow, that we must mulch immediately and liberally. Mr. Underwood thought dry lands more unfavorable than wet ones; said on his grounds, where the soil was dryish, the plants root-killed the worst. On low lands, he had never lost any plants by root-killing.

Mr. Gibbs never lost any plants by winter-killing, except in 1872 and 3, but always mulched heavily with straw.

Mr. Underwood explained that his soil was oak opening, inclined to be sandy.

Mr. Gibbs believed the severe winter-killing of 1872 and 3, the result of low temperature. On a portion of his field of eight acres, by accident, about two feet of straw was left on a small space, and that was the only part of his field that produced a good crop, though the balance was well mulched. Thinks that if after the usual autumn covering, if the season proves excessively cold, it is a good plan to put on more

mulch. His soil, a sandy loam. He has had good success for some years past by covering his ground heavily with straw before planting; in planting separates the straw on the row sufficient to plant, and then replaces it around the plant. Does no cultivating on ground planted in this way, but pulling what few weeds come through the straw. This is the cheapest way he can subdue weeds, as but few of the seeds of weeds will germinate and come up through the straw. The runners needed for new plants areput under the straw by hand, and will grow up through it. When these plants are mature in the fall, he has the roots under the straw and the leaves on top, and his berries never need washing to fit them for the table. Would be afraid to use this plan on heavy soil, for fear of the plants damping off. Mr. Underwood, in favoring this plan, said the straw best retained the moisture, preventng the damages of drouth, and protecting against winter-killing.

Mr. Gould found two causes for the winter-killing of strawberries: First, rupturing the roots, by heaving of the soil, caused by alternate freezing and thawing. Second, the drying out of the soil about the roots. Thinks mulching with straw will protect in most cases. He had never experienced a failure on northern exposure, but he had often failed to secure a good crop on a southern slope.

Mr. Gibbs explained that his planting in straw had been with the Wilson only.

Mr. Lyon said he grew the Countess De Haricout, and that he had succeeded better with it, than with the Wilson. He never had lost any Countess until last year. He usually leaves a portion of his plants without protection during the winter for experiment, and often gets good crops from the exposed part of his plantation. He found first and second crops the best. Usually gets 2000 quarts per acre as an average, and has grown 3500 quarts per acre.

Mr. Dartt said he thought strawberries degenerated, that he had heard lately of failures of the Wilson, and wanted to know if it was not running out?

Mr. Gibbs did not believe the Wilson was degenerating. Had grown them twenty-five years in succession without change of stock plants, and the last crop was as good as the first, in fact the best he ever grew.

Mr. Gould said the Wilson was good with him all the time. He averaged 3000 quarts per acre.

In answer to Mr. Emery's question if well rotted straw made a good mulch, Mr. Harris replied that it was the best. He had grown strawberries on all slopes; considered eastern and northern the best, and that a stony clay loam was the best; thought much of a good porous

subsoil, on which water would not stand. He never mulched on ground sloping to the north. Last spring his vines looked well, but he had no crop, except where the snow had drifted and made winter protection. He strongly recommended the Duchess or Countess De Haricout, as a farmer's berry, and that it would remain a long time bearing on same grounds.

Mr. Labbitt said he arranged his bed of strawberries, so that he can build low fences to accumulate the drift from the plowed lands. Had one bed from which he had picked berries for seven years under this treatment.

Mr. Pearce remarked, that he had plowed up all his Wilsons, and would never plant any more of them. He wants a berry that will stand the winter and sell at the highest price. He said that close to market, he could make more money off the Crescent Seedling, than any other berry. He had a record of a yield at the rate of 460 bushels per acre. He got 15 cents per quart for Crescent Seedling by the crate, when Wilson's were retailing at 8 cents. The Seth Boyden, he had found to grow large, of fine flavor and a good market berry. To guard against winter-killing, he selects level land and plants so that the crown is a little lower than the surface, and in cultivating, takes care not to cover with earth. His soil a leaf mold, originally now in cultivation twenty years, always mulches.

DESTRUCTIVE INSECTS.

BY R. J. MENDENHALL.

Our "bugs" are very much like our besetting sins, no matter how thoroughly we may think we have subdued them one year, on the first appearance of their vegetable temptations the succeeding year, there they are again in full force, bugs, borers, potatoe beetles, onion flies, currant worms, cabbage worms, cut worms—the whole rank and file of the crawling and flying army, and nothing remains for us but continual warfare, direct and strategetic! Occasionally, it is true, the familiar form of some pest almost or quite disappears from our fields or gardens, but almost before we have time to congratulate ourselves on the fact, we are confronted by a new recruit, with whose tactics we are not acquainted, and which may prove a worse foe than the one it supplanted, or whose number it at least made good. At all events our weapons, so to speak, need never rust for lack of objects upon which to use them. This seems a rather discouraging view of the case, but it is the true one.

We must accept the "insect factor" among the expense items in the production of our crops, and that we are gradually coming to do so, I need only instance the cost of raising a crop of potatoes, in which the item of Paris green or some similar application, as a remedy for the Colorado beetle, is set down as one of the necessary expenses as much as the planting, ploughing and digging. And except

the occasional locust and army worm invasions, we Minnesotians pay but a smal' tribute to insects. In the South it is very much greater, for in addition to all the pests with which we have to contend, and many more affecting fruit and garden crops, they have the ruinous cotton worms and tobacco worms, affecting two of their most important products. To keep these in check necesitates a large expenditure, which ranks with the hoeing and picking in the production of the crops. The planters have accepted the situation. They expect the attack of insects and their attention is mainly directed to the discovery of the most efficacious remedies and to the invention of machinery with which to apply them.

It is a well established fact that, up to a certain point, the longer a country has been settled the more numerous are the species of insects with which the agriculturist has to contend. This is a natural result from growing the same plants over large areas, thus providing sustenance to unlimited numbers of such insects as have acquired a taste for them. This being contrary to nature's method, she is not, at first, able to keep the proper balance between vegetable and animal life. After a time, however, she in most cases adjusts matters by the introduction of parasites that greatly diminish the numbers of the plant-feeding species, so that in very old countries the balance is again established. But nature's aid comes too tardily to save several generations of human beings from serious loss, and consequently there is a necessity for artificial remedies and preventatives. In the employment of these, as I have more than once said, there is great need of organized effort. What can it avail to the thrifty farmer to burn his stubble to destroy the fall brood of the Hessian fly, or to carefully clear up all his rubbish to prevent the hibernation of the chintz bug on his premises, if his careless neighbor on the other side of the fence neglects all these precautions? The latter will have flies and bugs enough and to spare, and the labors of the former will be well nigh wasted.

Knowledge on this subject must be more generally disseminated. The United States Government and many of the State governments are paying out annually large sums of money and employing distinguished talent for the investigation of the habits of injurious insects, and for the discovery of the best and cheapest remedies and means of prevention, and if our farmers and horticulturists would but read the reports of these officers and follow their directions, they would learn at what time each destructive insect was most easily mastered, and what remedies and applications to use against each species. For instance, the hay or folded paper band is an excellent remedy for the codling moth; as the larvæ of the latter, will hide in it in great numbers and may easily be killed. But this band would be no protection against the curculio or the canker worm; while the jarring, which is effective against the two latter, would in turn be no safeguard against the codling moth. This illustrates the necessity for accurate knowledge of the habits of each injurious insect.

The intensely *practical* farmer, is inclined to regard with something like contempt the careful and minute inquiries and experiments of the entomologist. "What difference does it make," he asks, "where and how these bugs breed? What we want to know is how to kill 'em." And that is just what the entomologist wants to know, too; but he realizes the hopelessness of taking them off individually, so he carefully watches them through their various transformations until he discovers their most defenseless stage, and where each is to be found at that

time, and then and there applies his remedy. This is the main object of the economic entomologist, and the result of his investigations is at the service of the farmer whenever he cares to avail himself of it.

During the past year several new destructive insects have been reported at entomological headquarters, but with most of them we are not directly concerned, as they are southern species and affect semi-tropical products only.

Some grass and clover pests, hitherto unknown in destructive numbers, made their appearance in New York State, and did considerable damage in certain localities. With these we may eventually have to deal. One of them is a species of grass worm (*crambus vulgivagellus*) of slender form and glossy green color, about an inch long, which eats the grass-blades off at the roots, and when full grown, spins up in a loose web on the surface of the earth. It has a habit of congregating in great numbers about the bases of trees before changing to pupæ, so that, as Mr. Lintner, State entomologist of New York, describes, he was able to gather it up by handfuls. The moth expands about one and one-eight inches. The fore wings are narrow, of a dingy cream color, with numerous dusky and metallic streaks. The pupæ form a snout-like projection in front of the head.

Several small moths have also been found breeding in the heads of clover and destroying the seed.

A small curculio of an imported species proved very destructive to clover in the same way, and also destroyed the leaves. The only remedy that has been proposed, is heavy rolling as soon as there is evidence of the presence of these pests.

At the close of the paper, Mr. Mendenhall exhibited a Wealthy apple, fair in outside appearance, but decayed in the center, from the work of the worm of the codling moth.

Mr. Underwood gave his experience with this pest, and considered it a very serious matter.

In answer to Mr. Jordan's question, how to combat the codling moth, Mr. Mendenhall said that the best plan was to place bands of hay around the trees in July, and examine and destroy the moths weekly.

Mr. Harris explained that two broods appeared annually. He said the hay bands should be placed about the trunk of the tree, about six weeks after the bloom of the tree, and examined every week until Aug. 1st, when they may remain until October, and then removed and burned. He referred to the cabbage worm as having been very destructive the past season. Said he had hope only by the assistance of parasites, that would destroy the larvae. Said he had not noticed anything of the kind early in the season, but lately he had found a small, black, ichneuman fly, evidently destroying the eggs of the cabbage butterfly. Referring again to the coddling moth, he said that the most economical bands to use, were heavy paper, folded once and tacked around the tree, about eighteen inches from the ground.

FALL OR SPRING DELIVERY OF TREES AND PLANTS, OR WHY DO HARDY FRUIT TREES DIE IN MINNESOTA.

BY M. PEARCE.

Answer, from various causes; I can answer all of them satisfactory to myself, but probably not all to the public, and what I am about to say on the numerous causes, are my own views after years of experience; various experiments, and close observation. I ask no one to endorse them unless they coincide with their own views and experience. I am fully satisfied that more hardy fruit trees are killed, or fatally injured during the intervening period, from the time the trees are taken up in the fall, and commence growing in the spring, than from any other cause. It is generally believed that when trees are taken up in the fall and heeled or pitted in, they are secure, and will come out in good condition in the spring. This depends in what condition the trees and ground are in when placed in winter quarters. If the wood was ripe when the trees were dug, and the ground sufficiently moist, and the trees heeled in as they should be, they will come out in perfect condition. But if the trees were stripped and dug at the time when they were making their healthiest and best growth, about the twentieth of September, I do not think it is possible to keep them in anything like good condition, by any known means, such as is practical by nurserymen and fruit-growers. A careful examination of all parts of a tree at this time will present a wonderfully imperfect structure, torn from its mother earth and all supplies, just at a time when it was putting forth every effort to complete its numerous organs, to give it protection against heat, cold, damp, drying winds and sun, when the earth is frozen and all nourishment is stopped from the roots. Thus prematurely removed, it is at the mercy of every element, like a cake of ice exposed to a June sun without any power of resistance. Such trees, to say the most I can in their favor, are worthless for planting, and the best use I know for them, is to use them for pea brush. Nevertheless, hundreds of thousands of such trees in years gone by, have found their way to Minnesota, and not only destroyed the business of honest nurserymen, but created a distrust in apple raising throughout the State, which in reality has no foundation.

About the middle of October, is about the usual time fruit trees are dug. In this State it is too soon; the wood is not ripe with the exception of a few varieties. Trees dug at this date, so far as outward appearance is concerned, are all right in the spring, but inwardly are affected, and it will make its appearance in the future as will appear hereafter.

Fruit trees injured on the south side and other parts (this is my opinion) is the result of four or more causes, namely: digging the trees too early in the fall, planting out too early in the spring, setting too deep and reversing the position of the trees as they stood in the nursery. To illustrate my views, experiments, and results on this subject more fully, and to show the power of resistance there is naturally in a tree, take for an example, six Wealthy apple trees, three years old; this variety is about ten days later in ripening its wood than the Duchess of Oldenberg. Dig three of those trees about the 10th or 15th of October, the other three after the

leaves are off, about the first of November; keep them all in the best possible condition till spring. As soon as the frost is out, set out four of them as follows: take one tree that was dug early and one that was dug late, set both moderately deep; set the other two in the same order, shallow; keep the other two trees closed up in earth, root and branch till the 25th of May, and then plant them out about as deep as they stood in the nursery. About the middle of June give those six trees a careful examination, and they will be found about as follows:

Those that were set early and deep, will have leaves about the size of a squirrel's ear. The tree that was dug early will have a dead streak on the south side, also dead in the forks and limbs; the other tree will be slightly affected on the south side. Both trees will be found to be in a very unhealthy condition. Those set early and shallow have both made a fair start; the one that was dug early is slightly affected on the south side. Those that were set late and shallow, are found to be in a very vigorous and healthy condition. No defect can be found on either tree. Examine those six trees again, about the 25th of May, the following year. The one that was dug early, set early and deep is found dead; the other one that was dug late, set early and deep is dead on the south side, and inside bark alive on three sides; the two that were set early and shallow are the ones dug early, and are barely affected on the south side, and other parts of the tree; the one that was dug late is very slightly affected on the south side; the two that were set late and shallow, are both perfect. The above results are real and well astablished by repeated trials, and can, on philosophical principles, be accounted for. Take for an example a fruit tree that is set early, the ground is cold, the roots remain inactive for weeks, the supply of food and nourishment that is in the wood soon becomes exhausted, and is without any protection until the ground becomes warm, and the roots are excited into action, and by this time the tree is more or less damaged, as we have shown. A tree that is set deep, the roots remain much longer inactive, and of course the tree is more damaged; while those set late, preserved in good condition, full of sap and vitality, set at a time when the ground was warm, the roots become active at once; the sap circulates through all parts of the tree, and in a very short time will be out in full leaf.

It is often argued by some, and they ought to know better, that the cold winters of Minnesota kill fruit trees. I think it is an error. A fruit tree that has made a good healthy growth, sap cells completely filled with sap, and wood ripe, will go through our coldest winters without injury; this may appear strange to some, but nevertheless it is true. Of course if the winter is very long the tree will come out weak and exhausted in the spring, as do your calves and colts when you run short of feed. It is precisely the same with a fruit tree, and for this reason, should never be removed in the spring. The fruit trees of 1872 and 1879 received their death blow before winter set in, from the first of August till the last of September of both years. It had been extremely dry, but a very scant supply of sap was taken up by the roots of the trees; just sufficient to keep them alive and no surplus to complete the growth of the trees and their various organs, and fill them with a supply for winter use. At the commencement of the drouth of each year, had the fruit trees been well mulched with litter or straw, and wet three or four times during those drouths, the trees would not have died.

There is but one right time to dig all deciduous trees, and that is at the falling of

the leaf, when all vegetation has ceased, and if this great law of nature was closely observed by all nurserymen and all deliverers at a distance, done in the spring, the results would be more satisfactory to the fruit grower and more money in the end to the nurseryman.

In summing up the essence of this paper (if it has any) we gleam the following.

First, all deciduous trees should be dug when the wood is ripe; or at the falling of the leaf.

Second, heeled in and covered up root and branch.

Third, set out when the ground gets warm, not sooner than the 20th of May.

Fourth, if a drouth occurs during the growing season, mulch without delay.

There is another thing in regard to fruit trees that have grown in the sun, that is worthy of attention. The back on the south side is usually of a light brown, and much thicker than that on the north side, the wood is also much tougher and interlocked together and owing to its zig zag form, contains at least a third more sap cells, which gives it more circulation and resistance. The bark on the north side is thin in color, from a light to a dark green, wood straight and splits free, showing very conclusively to reverse those sides would very naturally injure the tree. To obviate this, before digging I mark each tree with white paint on the south side. There are other things pertaining to the good of fruit trees I could mention, but have already taken up too much of your valuable time. I will here close thanking you for your attention.

In reply to the positions taken by Mr. Pearce in reference to delivery of nursery stock, Mr. Emery said:

The facts in the case regarding spring or fall delivery are as follows:

It is out of the question to have a nursery at every man's elbow in Minnesota. If it were, beyond question, the spring delivery would be *the best.*

At a guess, the average customer is 150 miles from the nursery. This distance presupposes a reasonable amount of time to dig and transport trees to them. We can count safely on only 15 days to do this. As a rule the leaves of our hardy trees are ripe and ready to drop at the touch by October first; the wood is thus proven to be ripe, and fit to be dug.

The farmer is the man to whom advice and admonition must be given. Let them give their nursery stock the deliberate care, that it receives up to the time it is delivered to them, and we will hear but little complaint regarding failure of stock. There isn't a nurseryman in this room that would dig stock and deliver it in the spring and expect it to do well. *Now*, if this stock must be dug in the fall, it can be wintered by the customer, as well as the nurseryman.

The farmer has no time to drop his seeding and go for stock in the spring, while if he had the stock to hand early in the spring, it could be planted at a season when it would be better than later set.

The tree that is set early in the spring is the one that is going to do well for the planter.

Ours is a changeable climate, no two springs or falls are alike, and we must plan our business with reference to a general average of the whole.

TUESDAY MORNING, JAN. 17TH.

Upon motion of Mr. Gibbs, it was decided that premiums be awarded apples shown, and not named on premium list, in place of some named on premium list, and not shown.

Messrs Grimes and Hollister, as members of Committee on Legislation, reported that our claims had been recognized by the legislature, and an appropriation of one thousand dollars per year been secured.

The following resolution offered by Mr. Emery was adopted:

Resolved, that the thanks of this society be, and are hereby tendered to the governor and members of the legislature for the appropriation made last winter for the encouragement of Horticulture, particularly to Hon. Daniel Buck, of Mankato, for his care of the measure, and to our committee on legislation for their faithful attention to their duties in laboring for the appropriation.

Mr. Jordan, strongly urged upon the society, the appointment of a committee to secure proper legislation to do away with the law taxing nursery stock.

Upon motion of Mr. Dart, a committee was appointed to draft a memorial to the next legislature, relative to taxing nursery stock. Committee appointed: E. H. S. Dart, E. B. Jordan, U. S. Hollister.

The discussion of Mr. Pearce's paper was next taken up. Mr. Harris thought it perfectly safe to dig trees as soon as Oct. 15th.

Mr. Pearce explained, that if a tree was dug early in the fall, it must not be planted until the ground warmed in the spring.

E. B. Jordan replied as follows to Mr. Pearce's paper:

If all our springs were uniform in temperature and rain-falls, we might arrive at a certain result by some uniform practice, but experience has taught us that we have no *certain* basis in our climate, such as setting trees the 20th of May, for the majority of springs a drouth sets in about the 1st of May, that lasts some springs from four to six or eight weeks, then good bye to all your late set trees.

In a few words my experience has been as follows:

The spring of '78 I set 3000 trees in March, and out of the 3000 I did not lose a tree. One spring some eight years since, I set trees in holes on the ice, many of the holes filling most full of water. This planting was done in March, and all the trees grew and did well. These two out of twelve successive years of planting trees, were the most successful, yet there might be springs when a tree planted late, may do equally well, but it would be the exception.

Second, that the cold winters do not kill our hardy fruit trees; well, this is a hard question to answer, because it is simply based upon a negative assertion. He does not undertake to tell us what does kill them, but by close observation it has been *fully* determined that all varieties of fruit bearing trees and vines will withstand just so low a temperature.

The trees of the orange, lemon and fig, kill with a few degrees of freezing in *every* instance, there being *no* exceptions. The peach will withstand 15 to 20 below

zero, but 25 below kills the trees. The Greening, Baldwin, Spitzenburg, etc., will kill at 30 below zero, while the Duchess, Tetopfsky and Hybrids, will withstand 35 to 40 below, but 45 kills even these "Iron Clads." So we find with the different varieties of grapes, the Eumelian withstands but little freezing, the Delaware stands a little more, the Concord still more freezing, and the Jansville about all our Minnesota winters see fit to yield. If you could give us winters in Minnesota with mercury going but 20 below zero, we could furnish apples to feed all our neighbor States on the frontier.

Mr. Pearce replied, that is was impossible for anyone to tell what degree of cold killed a tree. When a tree is in bloom, it is partially exhausted, the sap cells are not filled. The same is true of a tree in the height of its growth. At these times, or when in this condition, they fully receive their vitality, or fail to do so. The failure is their death—are an easy prey to cold or to drying winds. During all the time there is constant evaporation going on. Just as soon as from any cause the tree fails to go forward, this evaporation kills it.

Mr. Dart thought Mr. Pearce too strong in his assertion, without argument to sustain. He said the illustration given by the six Wealthy was not founded on the facts of experience.

Mr. Dart gave evidence of trees killed to the snow line, that were perfectly alive below the snow line.

Mr. Fish opposed burrying trees in the fall.

Mr. Harris preferred a tree to be delivered in the fall.

CULTURE OF THE CYCLAMEN PERSICUM.

BY JAMES BOWEN.

These are one of the most beautiful winter and spring perennials yet known; producing their elegant orchid-like, sweet-scented flowers of various shades, from deep red to pure white, in great abundance, from Christmas to May; their beautifully marked foliage, when well grown is also sufficient to attract attention and admiration from all plant lovers. I have grown and exhibited plants of this lovely species two years old, from seed producing over 100 flowers and the foliage equal to any zonale geranium measuring from eight to nine inches in diameter. It is a sight not easily forgotten, a house containing some 5,000 specimens, ranging in pots from six to ten inches in diameter, in full flower, and each one a specimen, indeed. And I can state from experience, that with very ordinary care, not so much as is often bestowed by many a plant-loving housewife on some fuschia or geranium, they will produce results far more pleasing and satisfactory than any other winter and spring flowering plant. For cutting for bouquets, or for window or table decoration, they are invaluable; or what finer sight when grouped with other growing plants in the conservatory?

You will, perhaps, think I am troubled with cyclamen on the brain, but I was induced to offer these remarks from the almost daily question of ladies; What can I grow that will flower and look nice for my window in winter and spring? My

answer invariably is, try Cyclamen Persicum, and with good care, fine results will follow, and here also is an opportunity for those who wish to try cross breeding for the improvement in color, size and shape of the flower. In performing this operation the pollen of one flower should be used to fertilize its neighbor The quantity of seed thus obtained will well repay the trouble to those who wish to commence the growth of this charming flower, especially those not provided with a greenhouse. Procure in the beginning of February from some reliable seedman, a package of seed for which you will probably pay twenty-five or fifty cents. The best thing to sow the seed in, is a shallow box or pan from two to three inches deep, with holes bored or open seams in the bottom, through which the water will easily drain. Over each hole place a crock, or broken pot, near the bottom, with half an inch of moss, easily obtained from any swamp. Use leaf mold two parts, well decayed vegetable mold one part, and one part of sharp sand. Well incorporate the whole, take a rough kitchen sieve and sift sufficient to fill the box to within half an inch of the top, then pat down evenly the surface, and with a fine sprinkler water the soil. When dampened evenly, distribute the seed. Do not cover except with very fine leaf mold, and then only sufficient to cover the seed; place the box where the direct sun's rays will not reach it, nor where the soil will get baked by the heat of the stove or furnace, taking care to water only with a very fine spray whenever the soil appears dry; in about three weeks the seeds will begin to germinate and form a small cone or bulb. When they have grown sufficiently strong, which if sown in March, will be in about four weeks, take up carefully and pick off singly into thumb pots, using the same kind of soil as for seed box; as soon as the weather permits place outside on a sandy bottom, or if a box with glass sash is available, so much the better, as they will require to be kept from the bright sun and heavy rains; re-pot as fast as the pots become filled with roots; to the soil already named, add a small portion of dry cow manure A slight sprinkling of fine bone dust over the mass at the bottom of the pot will prove advantageous. In the fall, before removing to rooms, and when giving their final shift, be careful the drainage of the pot is clean and good, and that no insects or worms infest the soil or the plant. When removing to the room you wish to grow them in, place as near the light as practicable; water when dry with tepid water; a slight sprinkle of the foliage twice or thrice a week, on sunny mornings, will prevent the red spider from making its appearance. The seed has been sown, the plant grown, and now for the harvest. A window full of sweet scented flowers of all decided colors, and in some instances beautifully spotted, although the latter is generally produced from too much moisture. They last a long time in flower, and every amateur grower can be successful in growing these, hence they are well suited for windows in city and country. Those having well appointed greenhouses, have also gardeners, well versed in plant raising. so that any information from me on this subject will be quite unnecessary. I will also add one more important item. After the bulbs have done flowering the first season, water should be gradually withheld until the leaves decay, when shey should again be placed outside in a shady place, protected from heavy rains, when the seeds will bulb also. When again wanted, carefully shake out, removing as much of the old soil as possible with a pointed label or stick, care being used, however, not to injure the roots. The same treatment will follow, when the plants thus treated will produce the second and third years even much finer results.

The report of Peter M. Gideon, Superintendent of the State Experimental Fruit Farm, as made to the Regents of the State University, was read as follows:

EXCELSIOR, MINN., Oct. 30, 1881.

Wm. W. Folwell, President Minnesota State University.

DEAR SIR:—Below, I give a brief report of the doings and success on the State Fruit Farm the present year:

The last winter, though hard, was less ruinous than anticipated. Only lost ten or twelve varieties, out of fifty varieties, oflong keepers, not one of which are on their own or tender roots. Such as are generally used in nursery stock, could have not survived the winter, but grafted on our hardy seedling stocks, that mature early, and thus stop their flow of sap, and in due time prepare for winter, is what saved them and gives assurance of ultimate success in growing long keeping varieties through fertilization; the commingling the pollen of our most hardy, though early varie ties with that of the long keepers, thus giving hardiness to the forthcoming seedling, grown from the seed of the long keepers, a result very desirable, as there is no long keeper yet tested that will make a long lived tree, though grafted on the most hardy of stocks; a few crops and they are gone, but in those few crops we will secure the long hoped for prize, a fact developments clearly demonstrate. But as yet no long keeper has fruited, but hope another year may produce a few specimens, as the trees are doing quite well in health and vigor.

As anticipated, every year we lose trees, but each spring fill up again, and when full the orchard holds 768 trees.

As to pear culture, I must say the prospects are not flattering. The last winter cleaned all out, except those on the American Mountain Ash, and even some of them are hurt more or less, enough at least to make success doubtful. A few more year's trial will tell definitely—success or failure.

We have about six hundred grape vines on the State Farm, consisting of nearly every variety of note in the United States, the most of which will probably fruit next year.

No variety of blackberry will stand cultivation here, not even the natives.

The raspberry and strawberry culture we find a paying success, and what is best, better able to tell another year.

That part of our State Farm cleared and plowed, by order from the University, and by the same paid for, comprises five acres, two of which is set in our best seedling apple trees, done without charge on our part, and will fill up the balance if not otherwise ordered.

Important experiments on our own grounds, in the meantime, have not been neglected.

Through the last two years, grafting has been almost a failure, owing to the damaged condition of the trees, the effects of the two last hard winters Some fine samples of new seedlings have borne the first crop this season, but further trial will test the real value, and keeping qualities and productiveness. Trees are hardy.

We have a fair prospect of making peach culture a success. Some fine fruit this year for the first, but it requires care and skill, as the trees have to be laid down and covered, same as the grape vine. It will take another year or more, to tell whether

it will pay, for home luxury or market. If a success, the whole procedure will be given.

Respectfully, PETER M. GIDEON.
Superintendent of State Experimental Fruit Farms.

Mr. Harris reviewed the management of the fruit farm. He thought we needed a system embracing hand fertilization of blossoms to secure a certainty of immediate improvement in varieties, and not be dependent wholly upon chance crossing, through pollen carried by winds and insects.

Mr. Grimes respected Mr. Gideon's efforts so far as they went, but was in favor of more systematic work in the experiments and more complete records of it.

Mr. Jordan defended Mr. Gideon's action, and Mr. Gibbs spoke as follows:

Mr. President: This apple [presenting a plate of the Wealthy] is Peter M. Gideon's contribution to the fruit interest of the Northwest, and not only to the Northwest, but of the whole country, for it is becoming famous everywhere, and is eagerly sought after for nurseries and orchards in all the apple belts of the land. It is doubtful if any other apple combines in itself so many excellent points that go to make up the perfect apple. It is hardy in tree, it has quality, size, fairness, color, in fact every beauty to the eye; it bears early, profusely and annually, and it is a fair keeper—a good, reliable keeper for its season, which is early winter. And its propagation was not the result of accident either. It came to Mr. Gideon after more than twenty years of practical, careful work in the planting of apple seed, after years of failure and discouragement, and likewise of that impoverishment which overtakes so many great inventors and followers of hobbies for the benefit of mankind. By no set of men was it more joyously welcomed than by the nurserymen of Minnesota, who have so largely composed the membership of this society It made its advent at a time when they had played their last card for a hardy winter variety, and lost, and ruin stared them in the face. The spring of 1873 found them with nothing whatever of their own production in the shape of an apple to tie to, and nothing of anybody else's production, east or south, except the Duchess and Tetofsky, both summer fruits. They were utterly unable to offer a winter variety in market that had stood the test of that Arctic winter of 1872-3. At this critical time Mr. Gideon's Wealthy stood out as the only one alive, as you might say, and promising, and they all grasped it and on it rode again into prosperity. It takes time to propagate and introduce a new variety of apple, and to distribute and grow it so as to have it make its appearance over a state. Yet it is but seventeen or eighteen years since the little crab seed that produced the Wealthy was planted, and now, after having had it exhibited for many years by the bushel at our fairs and at our meetings, some here present have seen it during the past autumn in the markets of Minneapolis, St. Paul, Rochester and Lake City by the hundreds of bushels, and if in the next ten years it does as well as it has done in the past ten, it is perfectly safe to say that we have trees enough of it already planted about the State to supply the wants of the growers and leave hundreds of car loads to sell or ship abroad.

And now, Mr. President, what I wish to say in the most kindly manner to my fellow members here, and what has been in my mind for three years past to say is, that in view of such a service to the fruit interest of our State, and of the benefits conferred on all of us as individuals by the production of this Wealthy, and in view of Mr. Gideon's continued labors and experiments to produce other and possibly more valuable varieties of fruits by systematic propagation, based upon his long experience and close observation in cross breeding, had we not better, as a society, either sustain him in his position on the fruit farm, or if we cannot do that at least let him alone? He has been made the subject of criticism in our meetings more or less personal for three or four years past. He has had his friends and defenders in our debates, but when published in our transactions the record has been all against Mr. Gideon. I, for one, am tired of this I feel that this society, instead of being his detractor, should honor him. Other state horticultural societies are ringing with his praises as a public benefactor. Every one of them in western states has made him an honorary life member, and welcomes, in fact seeks his contributions to its transactions. But it has come to pass here in this case that a prophet is not honored in the horticultural society of his own country, and the fact does not at present stand to our credit. What is the reason of this? Mr. Gideon was invited four years ago to read his paper on "Fruit Raising and Fast Horses" before this society. In that paper he introduced matters not strictly horticultural, yet in his opinion relative thereto. He commented freely, it was thought irreverently, in language that will stand, in some sentences as models of vigorous English, on social vices and sundry shams. It was too strong meat. The members could not all stand it. Its further reading was interrupted in the middle of the paper and forbidden by vote. Mr. Gideon placed the manuscript in his pocket, and retired from the meeting. He has not been here personally since, and probably will not until his paper is recalled and spread upon our minutes entire. But what of this? Because we have got up a little rumpus with Mr. Gideon, shall the whole business of thorough, systematic experimenting in the propagation of new varieties of apples to supplement the Wealthy, and of other fruits, be set back? "Because we are virtuous shall there be no more cakes and ale?" Who else but Mr. Gideon is cross breeding in apple blossoms systematically? Who else but him is planting apple seeds, except, perhaps, to grow roots to graft Mr. Gideon's varieties on for the tree market? I mean who else but Mr. Gideon is doing this on any general scientific plan in the public interest, or any other interest for that matter? Where is the man among us who has obtained by a lifetime of observation such a mass of useful information in apple propagation to use as a basis of successful work now and in the future? If we do not like Mr. Gideon's religious views, or all of his eccentricities, we are not thereby obliged to forget that he has done more for horticulture than all the rest of us put together, nor that his goodness and integrity as a man are unsullied; nor that while we are scolding him annually he is plodding away in his experiments for our benefit, as hard as ever. Even while we sit here, he is away, ransacking all the western and some of the eastern states for information and scions of new varieties for the fruit farm. Nor need we be oblivious to the fact that though this state experimental fruit farm is less than four years old, and not reasonably expected to show any new fruits at present of its own growing, that is, in both tree and fruit, yet by contributions from his own private grounds freely

and without reward transplanted to the state farm, Mr. Gideon has advanced the state orchard fully one-half the time necessary from parent flowers to new seedling fruit, and perhaps before these transactions of ours shall be printed we may hear of a still better apple than the Wealthy dropped into our open mouths. Mr. Gideon has his commission from the governor to work away on that experimental fruit farm at Excelsior. He makes an annual report to the board of regents of the State University, as the law directs him to do. They furnish us with a copy of it. What more can we require of Mr. Gideon except courteous reception of friendly visitors, which is always accorded? He is put there solely to work out Peter M. Gideon's ideas of fruit propagation by cross breeding, and for trial of new sorts from elsewhere. The State gives him a little money to do it with, payable not from taxes taken from the people, but from the University fund contributed by the United States Government. It is not all for himself, for out of it Mr. Gideon has to pay for the hired labor he puts upon the experimental farm; and the State has made enough in the purchase of that 116 acres of land on Lake Minnetonka to pay, if the surplus were sold at present prices, Mr. Gideon his annual stipend to the end of his life. In honoring Mr. Gideon and giving him this encouragement and employment, it has put money in its own purse by the rise in value of the land. So far, so good. Let it honor itself by continuing to help him as it is doing at present, in his labors in the propagation of the new and hardy seedling fruits that we so much need; and there is nothing else that could offer so good a prospect of success in this direction, except it might be that some of us, or some other of our citizens in the State, should with equal knowledge and equal enthusiasm and industry, undertake to do what he is doing for us. One word more. Mr. Gideon has been criticised as having no system in his propagation. Mr. President, this is most unjust and unfair. His work is all system at present. Look in the Iowa agricultural report for 1879, and his reports to the board of regents, and his communications to the press, and you will see what it is. His methods are exact and are based on his long experience and observation of nature's laws. Again, he has been held to account for not exhibiting his fruits at State fairs. All the apples he has raised up to this date have been produced on his own farm, and he has a right to do as he pleases with them. He objects to the undue prominence of horse-racing and does not patronize the State fairs. That is all there is of that. In our own society exhibitions we have never had a large display of Wealthies that did not come from Mr. Gideon's trees. If he has anything in future that is valuable either on his own farm or on the State experimental fruit farm, we shall all have the benefit of it, for there is no patent on inventions of this kind, nor can any apple tree be grown and hid under a bushel.

Mr. Emery said Mr. Gideon was a conundrum, and moved to give up the discussion and presented the following resolution:—

Resolved, That the committee on legislation be instructed to use its influence to abolish the act providing $1,000 per annum for conducting the experimental farm under management of P. M. Gideon, and that an annual pension of $1,000 be appropriated for the benefit of Mr. Gideon, as a token of the appreciation of the State of his services in producing the Wealthy.

Mr. Dartt did not believe any man entitled to a premium—because of the Wealthy or any other fruit; said the Wealthy was not hardy on his grounds.

Mr. Jordan said he had 7,000 trees of the Wealthy in orchard, and intended planting 1,000 more next spring.

Mr. Gould spoke highly of the Wealthy, and said that he believed Mr. Gideon would yet accomplish valuable results on the fruit farm.

Motion of Mr. Abernethy to table Mr. Emery's resolution lost, and it was by unanimous consent referred to the following committee to report at this meeting:

F. L. Gould, O. Gibbs, R. J. Mendenhall. The following committee was appointed on the financies of current meeting: R. J. Mendenhall, S. M. Emery, A. W. Sias.

The report of general fruit committee partially submitted as follows:

LaCrescent, Minn., January 10, 1882,

U. S. Hollister, Secretary State Horticultural Society:

Dear Sir:—I am sorry that I cannot attend the annual meeting of the State Horticultural Society, but I will send in short report as general Fruit Committee. There was not much fruit in Houston county, except grapes. They were middling good, but the Concord was the best. I have some new seedlings that I think are good, but the birds spoiled them last year. Strawberries were not much. I had one seedling. I found out they were pistilate and set some of Hart's seedling in the bed and they were the best I ever had. Hart's seedling did not do anything. Raspberries were not much, they killed last winter. Not many apples in this county; the Tetofsky, Duchess and Walbridge bore the best. Ben Davis Northern Spy, Fameuse and Haas killed some last winter. The blight was very bad on the Crab apples and some apples. The Wealthy bore some, but they were not so good as before A good many of the Duchess were small, knotty and hard inside. What is the cause of it? Trees look favorable for a crop of apples this year. Strawberries are not very good; they were hurt in the dry weather last summer.

Respectfully yours,

John C. Kramer.

M. I. Matthews, of Foster, Big Stone County, reports as follows regarding the Catalpa Speciosa:

I received my Catalpas in the spring of 1879, and that summer they made a growth of 12 to 24 inches. In the spring of 1880, they had frozen back about half their growth, and in the spring of 1881, about one-fourth, though a few stood the last winter without injury.

They do not ripen their wood in the fall but continue to grow until frost.

I consider them good for ornamental planting, but not suitable for general culture as a forest tree.

Litchfield, Minn., January 10, 1882.

The last two winters has been hard on fruit trees in this section, but the last summer has been very favorable, and the trees have recovered very rapidly from

the injury. We had a large supply of fruit of all kinds that we attempt to grow. All Transcendent, Hislop and Early Strawberry crabs bore abundantly.

There was a good yield of Duchess from the few bearing trees we have, also a few Minnesota, Beecher Sweet and Wealthy.

The crop of small fruits was very full.

G. W. FULLER.

ROCHESTER, MINN., January 15, 1882.

Mr. President, and Gentlemen of the State Horticultural Society:

Twenty-two years ago last month, I came to this State. At that time the "Wiseacres" all said, it was worse than useless to attempt to raise fruit in Minnesota. But rather than profit by this premature information, I chose the old motto of—"Prove all things and hold fast to that which is good." I was able to comprehend, even at that early day, that *fruit* was good, and I have since proved upon several sorts—proved too that with fair culture they will pay better than wheat at $1.25 per bushel, and although laughed to scorn many times during our early experiment in planting trees in Olmsted county, yet we claim now that it is our turn to laugh, as we fairly glutted the Rochester market the past season with the common apple, and shipped quite a quantity west, and no county in the State carried away so many premiums on fruit as ours at the last State Fair. Summer and fall fruits were much more abundant than winter. This mistake is mostly due to the fact, that for several years during the early history of this society the great cry was for fruit from Russia. This demand was supplied with summer fruit, but now the demand should, and *will* be for native grown winter fruit. Will name six varieties of common apple and same number Hybrids that we believe yielded the best with us, viz.: Duchess, Wealthy, Rollins Russet, Haas, Fameuse and Walbridge. Hybrids—Meader's Winter, Powers Large Red, Whitney No. 20, Conical, Transcendent and Orange.

PEARS.—Pears blossomed finely, but for some unknown reason the fruit mostly dropped before maturity.

PLUMS.—No tame plums—wild, or seedlings from them in abundance and some of most excellent quality.

CHERRIES.—Would have been a fair crop had it not been for the ravages of insects.

GRAPES.—Grapes have done remarkably well, especially the Janesville, which appears to be rapidly growing in favor, also some of the Roger's Hybrids. The Concord, Clinton, Hardy Connecticut and others yielded most abundantly. The only total failure that I have observed was with the Eumelian.

GOOSEBERRIES.—Native varieties fair crop; English sorts, complete failure. Currant crop good as usual, seldom fails in our county.

BLACKBERRIES.—But little attempt has been made in our county as yet to cultivate this valuable fruit. The most successful grower as far as I know is Rev. M. L. Tibbetts, of Dover. He fruited several new varieties the past season, and when I saw them July 1st, were well loaded with fruit. The Stones Hardy looked very promising.

RASPBERRIES.—The Philadelphia winter killed pretty badly last winter. The Turner stood the winter good and yielded well, and is by the way the most popular

variety ever introduced into our county. The Mammoth Cluster and some of the other Black caps produced good crops.

STRAWBERRIES.—Last, although not the least, among the good things mentioned comes the Strawberry Of this delicious fruit, we were blessed with a large crop, and good paying prices kept up to the very last picking.

Downers Prolific, Green Prolific, Crescent Seedling, Captain Jack, Hart's Minnesota Seedling paid the best. The latter for size, and uniform good shape, and quality, I consider inferior to none on the list.

A. W. SIAS.

SAUK CENTER, Minn , January 12, 1882.

Mr. President and Gentlemen :

From quite a general observation and considerable experience in *small fruits*, I would report that there seems to be no reasonable encouragement to attempt the raising of any of the standard apples except the "Dutchess," and that only in the best of locations Some settings of the "crabs" are looking and bearing well, and some from their appearanee indicate that their vitality is on the decline.

Currants, with proper pruning and mulching, grow thriftily and bear profusely. With me the Philadephia Quinces and Purple cane raspberries for many years have proved almost perfectly hardy to stand the winters after thorough cultivation and early and continued pinching off of the tips of the new canes. The pinching back keeps the canes stocky, self supporting, more productive, and I think the main condition to be observed to secure hardiness.

With me the Philadelphia proves far the most productive—the Purple Cane next, and of far better flavor—the Turner not as productive as the last named, but of superior quality. Strawberries, I consider a success in good locations, with intelligent care.

GEO. H. FISH.

REPORT FROM THE 9TH DISTRICT.

LAKE CITY, Minn., January 10, 1882.

Strawberries—Only a medium crop. Season of fruitage favorable, but the vines had suffered from drouth and perhaps other causes the previous autumn. The Wilson continues to be the berry mostly in sight in the general market here, although the Red Jacket, Captain Jack, Sharpless, and others are known to be doing well. The Sharpless is the largest berry yet raised in this district, and is well liked by those who have it. Specimens of it of enormous size, making the largest Wilson's look small by comparison, were exhibited at our Lake Pepin Horticultural Society's meeting in June last, by S. S. Workman of this city.

Raspberries—Very light crop. Scarcely any in market. Of the reds, the Clark made the best showing on the bushes, and of the black the Seneca has always taken the lead here.

Blackberries—None fruiting within my knowledge except a few Snyders here and there. Stone's Hardy, recently planted, are very promising. These two sorts are at the present writing perfectly soand to the terminal buds, without protection, although I am inclined to think they should be pruned low aud branchy and covered, to make sure of their wintering well in the severest seasons.

Cherries—There are so few in bearing, that the birds take them all before they are ripe. Early Richmonds planted since 1872, (when the cherry trees were killed everywhere in the west), are found in many places in this district, are looking sound and thrifty.

Pears—I did not see one in the district last year, and know of no sound ones of bearing size. They can be grown well enough on the northerly slopes of our river bluffs; there are Flemish Beauties twenty feet high at Read's Landing; but the blight comes in just when the grower begins to think he is going to have some fruition of his hopes, and that is an end of his pear culture. Give us a remedy for pear blight, and these slopes will fill our markets with twelve-ounce pears. The winters will not kill the tree there.

Plums—Enormous crops of Forest Garden, DeSoto, Weaver and Miner—the latter fruiting for the first time, and just barely saving itself from the axe of the owner by offering a show of fruit the last year of its long probation. Enough can not be said in praise of these delicious natives of southern extraction, yet perfectly hardy and successful here, and as near curculio proof apparently as any plums can be.

Grapes—Abundance of all sorts, and good quality. I would again make mention of the Janesville for its merit of earliness for the benefit of people wishing to plant in low grounds liable to early frosts.

Apples—Light yield except in a few locations. Local markets fairly supplied with Duchess and Wealthy, of the large apples; also the common and Hybrid crabs. The large orchards of Underwood & Emery, of this city, owing doubtless to constant cultivation during the past few years, distinguished themselves and enriched their proprietors in this off year for apples, by bearing an abundant crop. From one orchard of eight hundred Duchess, planted I think, eight years ago, they harvested nearly seven hundred bushels, and sold them mostly in St. Paul and Minneapolis at prices ranging from $1.00 to $1.33 per bushel, net. From an orchard of twenty-five hundred young Wealthies, bearing this year only their second crop, they picked about three hundred bushels, while their harvest of crabs and Hybrids was estimated at five hundred bushels more, all selling quickly for cash at good prices. So you see we have at least one place in this district proving that apples can be profitably raised in Minnesota, and justifying the faith of that long-headed fruit pioneer, P. A. Jewell, who, when he became convinced of the value of the Duchess and Wealthy, for this climate, backed up his recommendation to the people to plant them freely, by setting them out for permanent orchards on every available rod of his own grounds. While it is true that the generality of our people show little interest in apple culture, not enough to take hardly decent care of the trees they reluctantly buy, there is enough successful orcharding going on in this district, though mostly on a small scale, to impress this conclusion upon me, from extended observations made from year to year, that those who judiciously select their varieties to plant, avoiding the known tender ones, and the bad blighters, and then admitting to themselves the fact that the hardiest of our trees need protection, give it to them, together with cultivation and general care in proportion to their value as faithfully as any good farmer takes care of his cattle, his horses, his pigs and his poultry, can raise all the summer, fall and early winter

apples he can use, and the hardy long keepers, too, whenever this desirable thing shall be truly added to our list.*

Respectfully submitted by

OLIVER GIBBS, JR.,
Of General Fruit Committee.

LA CRESCENT, January 10, 1881.

U. S. Hollister, Secretary State Horticultural Society:

DEAR SIR: As a member of the seedling fruit committee, I am expected to make a report. Sickness in the fall prevented me from making an examination of most of the trees heretofore reported. Some of the Pickets' seedlings are hardy and fruit fair, but they are doubtless of Siberian origin. Two or three trees upon the farm of Mrs Geo. Hartman, town of Hokah, still show evidence of hardiness. One at least is a good keeper. A few new seedlings were shown at the last State Fair. Two by S. Bates, Stockton, and two by Wm. Forster, town of Orion, were very fine and should be looked after. If they should prove hardy they will prove of considerable value. One of Mr. Forster's seedlings is a long keeping sweet apple of good quality, medium size, and reported as a profuse and regular bearer. I have heard of another tree at Plainview, about twenty years old, never winter killed or blighted; never fails to bear fruit. The fruit below medium in size, sub acid or tart; season, September to December. Spoken highly of by those who know it, and is the property of G. S. Washburn. Mr. Kramer, of La Crescent has some young trees that look promising, but they have not yet fruited.

Yours, &c.

JOHN S. HARRIS,
Member of Seedling Fruit Committee.

MINNEAPOLIS, January 13, 1882.

Owing to the want of time I have not been able to make a thorough examination of our native seedlings. I will name a few that have come under my observation. The first that I shall call your attention to is the Clawson. The original tree originated in Wisconsin about forty years ago. In 1854, the son of the originator of this tree removed from Wisconsin to Olmsted county, Minnesota His father, then an old man, took up four sprouts from the original tree, and the son set them out on his claim Those trees from the day they were set have lived under every disadvantage, both in regard to location and protection. The trees are still living and have been producing fruit for at least twenty years. The trees are now twenty seven years old, and still living. The trees are immense bearers; fruit resembling the yellow Bellflower in size and color, very juicy, excellent for cooking or eating, and will keep longer than the Wealthy. The age of the trees is sufficient to recommend it to the good favor of the people of Minnesota. The Kimball 20 years old, free from blight, perfectly sound, fruit of excellent quality, and a long keeper.

M. PEARCE.

TUESDAY AFTEROON, January 17, 1882.

Meeting called to order by President Harris. Upon motion of O.

*For list of fruits raised in this district, see report of fall meeting of State Horticultural Society, and President Harris' report of exhibits at State Fair.

Gibbs, Jr., the following named persons were elected honorary life members of the Minnesota State Horticultural Society:

Prof. J. L. Budd, of Iowa; Dr. John A. Warder, of Ohio; Geo. P. Peffer, of Wisconsin; Marshall P. Wilder, of Massachusetts; E. Wilcox, of Wisconsin; for long and distinguished services in Horticulture and Pomology. Mr. Peffer's paper on apple blossoms was read by the Secretary, as follows:

Mr. President and Horticulturists of the State of Minnesota:

I see by your transactions for the year 1881, that I am to write a paper on the following questions:

APPLE TREE BLOSSOMS.

1. Their date of opening.
2. What varieties mature simultaneously?
3. What varieties are perfect and what imperfect bloomers?
4. What varieties should be planted together for mutual perfection in fertilizing processes?
5. What varieties have the greatest power to resist spring frosts and winds?

To answer the first question would say that the first blossoms appeared this spring on the following varieties: Fourth of July, Tolman Sweet, Lyman's Yellow, Transcendent, Whitney No. 20, and Bellflower crabs, on the 4th of June; it being very late with us on account of the large amount of snow that had to melt, which kept the ground cold. On the 5th, Lyman's Early Red, Haas and Early Strawberry, (on a gravelly knoll.) On 6th, one Duchess (on the same knoll,) Plumb's Cider, Golden Russet, Tetofsky, Fall Stripe, St Lawrence. 7th, Hyslop, and mostly all of the other crabs, Limber Twig, Fall Orange, Sour Bough, Summer Queen, Summer Pennock, etc. Eighth, Duchess, Red Astrachan, Pewaukee, my Golden No. 4, also No. 1, 17 and 35, Nellis White, Pomme Grise, Cranberry Pippin, and a Wealthy, on level land. Ninth, Westfield Seek-No-Further, Northern Spy, Fameuse, Utter, Alexander, Baltimore, Englfsh Russet, also a seedling of Yellow Bellflower. Tenth, Jonathan, Rawle's Janet, and seedling Gilliflower, and a few others under northeast side of a knoll that runs north and south through the orchard.

By this time the first bloomers had all their blossoms open, and some flowers had already dropped their petals, but as I had to examine very closely, to answer the other questions, I found that some petals had only wilted and were adhering to the calyx, and the pistils were turning grayish yellow, and were quite limber. On closer inspection most all those varieties, (apple as well as crab,) that commenced to blossom the 5th and 6th were affected, and had begun to wilt or droop' but those that blossomed later seemed to be opening quite even, and all had about finished on the 15th.

Second, we could not determine the varieties that would have blossomed at the same time, as some parts of our orchard are high and others low, and some were covered with snow two feet deep, while others were bare. Where the ground was bare, the trees commenced to bud several days in advance of others in the orchard. Although the varieties named were put down as the first ones that blossomed, we

have to mention that a Wealthy on a gravelly knoll opened a few flowers on the same date as the Transcendent; while the most of them on level ground commenced to blossom on the 8th. Several, where the snow laid the longest, not till the 13th; so there were eight days between them. All but the first one bore a good crop of apples, and that one was on the knoll, and the blossoms were affected the same as those already mentioned.

Now as we come to the third question—the flowers when they first opened were as perfect as those on the later trees of the same kind, but they were scalded or burned as it afterwards proved, and will be described more fully hereafter.

There is quite a difference in the size, form, and color of the petals, or flower leaves of the different varieties, some being larger than others; also, some have longer pistils and some thicker and broader ones; some are crooked and some doubled up, when they push through the petals. All that I have examined seem to have plenty of stamens and the flowers appear to be perfect; but the variations in the forms of the pistils must have something to do about their impregnation, as those that are longer and straight seem to have more perfect stigmas, and force their way through the flower's leaves first, so that they can be fertilized as soon as the pollen is ripe enough or dry enough to fall or fly. By all appearances there is pollen enough in the flowers of one single tree bud to fertilize fifty or one hundred times as many pistils as there are in the flowers of that bud. The only way to answer the question asked, would be to isolate or inclose a bud of the different varieties, either in a glass bottle or small light paper bag, until the flowers had opened and the petals dropped off; then it could be taken off and the flowers watched to see if any fruit sets. If fruit sets and perfects itself, and the seeds become full size, the perfection of the varieties could be ascertained to a certainty. A single bud on a spur is sufficient on one tree to make a trial; and the seeds sown and trees raised from this fruit, could not be other than the variety of fruit the seed is raised from. But if the little apples should all drop off, it would be evident that either the pollen or the pistils were not perfect; that is if the other buds on the tree should be setting fruit.

In answer to the fourth question—I would say, plant together those varieties that blossom at the same time.

Answer to the fifth. All those that have very short pistils, and hollow petals, as they shield the embryo and protect it from the cold and winds; such, for instance, as the Fourth of July, Wealthy, Fameuse, and others that have such forms or are so constructed.

Now we must describe what we mentioned on starting in on the third question. We found the petals burned, or scalded as it were, and before the later varieties commenced to bloom, the first ones were already dead. It happened that we had from 92 to 96 degrees heat, and wind south, southwest, for two or three days, just in time to scorch the first bloomers, and in a few days not only the blossom, but the leaves that had started out with the blossoms were blighted from the heat, and commenced running down and effected to the last years' growth, so nine-tenths of all the twigs so affected perished, except those we stopped by breaking off the new spur that had just blossomed. It made no difference, the apples, as well as the Transcendent crabs, were affected alike on the north, as well as on the south side of the trees. All the trees that were in full bloom on those two or three hot days

were so blighted they looked in a few days after as if a fire had scorched them, but trees (of the same varieties), although they were only a few rods off, but with no blossoms on them, on those hot days, or had no flowers at all, were exempt from blight all summer, although we had it just as hot afterwards, and more so; but the sap must have been in better condition to withstand it. Why those varieties were not affected alike, must be caused by the absorption of the liquid matter or sap, that circulated freer or faster than ahose that were in full bloom, than those that hadn't any, and the flower petals offered larger surface, and thinner leaf, for the hot and dry air to absorb it faster than it could be supplied; hence the wilting and finally drying up of them, on the ends; but all the flowers were not affected from the one bud, because they do not all open at the same time, as there is always one or more that will take the lead (same as sprouts on potatoes) and upon the petals first.

After wilting or drying up, the damp, or cooler air sets in, the petals turn grayish brown, and then is the time, the germ of fungii germinates, or as Prof. Burrill explained at the Illinois State Horticultural meeting in Chicago last December, about finding a still lower minute organism, called Bacteria. He showed charts, and explained the kinds he found in five blighted trees, and said that kind lived on dead substances, same as fungii, and then the leaves turn dark, and finally black, and rotten sap or vines running back from the petal to the calyx, and then down the stem of the little apple, on away to the base, where all the fine stems started from, (on the bad) making all affected after them, the new on young growth of the shoot, (or if no shoot had yet started) the bunch of leaves, but if that is rubbed off or dry weather had set in again in the apples, and most of the crabs, it is stopped on accent of thicker bark, and other causes. On the pear it generally runs down until the tree is killed, if not in one season it will be in the next, unless stopped by the fruit grower, either by cutting off the affected spur or whole limb a few inches below where there is life. We find by cutting off the outside bark at the place where the limb should be cut off answers fully as well, if the knife has not been used on the affected part, but if so it must be cleaned before using in girdling.

Gentlemen, I am very much obliged to you for giving me this duty, though my work is not satisfactory to me.

I shall pay more attention another spring if I live, and make closer examinations, as I find there are just as many varieties and forms in the blossoms as there are varieties of trees, and I think the varieties can be distinguished more correctly by the blossoms than by the fruit itself. Also for the marked effects on starting the blight from the blossoms, and as most western fruit growers who have talked or wrote on the blight question, myself not excepted, always advocated that the sap that has been forced through either the stomata of the small hair on the under side of the leaves, or by puncture &c.. or the pressure of sap circulation are the causes for the parasitic fungii, which germinates in sap that is dead, or in an overdose of it, (as we always find it first on young, thrifty, fast growing trees and especially on highly enriched and cultivated grounds), I found it just the reverse, there was not enough for a supply, hence the petals wilted, just when they wanted the largest supply, and when the absorption uses the greatest, but as the next question is on blight, and the gentleman is perhaps better acquainted with this subject than I

am myself, and can do it better justice, or can perhaps give us some remedies that will enable us to avoid, I will close.

GEORGE P. PEFFER,
Pewaukee, Wis.

Mr. Gibbs offered a resolution thanking Mr. Peffer for his valuable paper, and requesting him to continue his observations and report at next meeting which was adopted.

Mrs. VanCleve read the following paper on

SHRUBS.

In Colorado, last summer, I noticed many beautiful shrubs quite new to me growing among the canons and on the mountain sides, and in many highly ornamented grounds. These shrubs, transplanted, or left where nature placed them, and carefully cultivated, occupied a very prominent place. The flowering raspberry completely covered with large snow-white blossoms, is very beautiful, the flowering season is long, and is succeeded by the fruit, similar to the ordinary raspberry in appearance, but more like the mulberry in taste, not considered valuable as a fruit, but very pretty. The foilage is dense, and the leaf beautifully shaped; it is hardy and of rapid growth. A landscape gardener told me he had planted the seed at his home in Wisconsin, and it had grown nearly two feet the first season. He thought it could be raised easily in Minnesota and would stand our winters with very little protection. Then there is a bush there which bears a fruit something like our sumach in taste. It is called the "lemonade berry," the leaves are very bright and glossy, prettily shaped and very full; the bright red berries in small clusters ornament it till late in the fall. The silver cedar found there is the prettiest of evergreens. It would, without doubt, thrive in our climate, and its silver frosted leaves and berries would contrast beautifully with the dark green arbor vitæ and other permanent shrubs so much in vogue with us.

There are many other shrubs native to that locality which are hardy as well as ornamental, and seeing these native products so highly appreciated there, brought to my mind many pretty plants growing in our own woods which might be used to advantage in the decoration of our lawns and our door-yards. There is the cranberry tree (*Viburnum opulus*) or bearing snow-ball; erroneously called the high bush cranberry, with its darkly veined leaves, its red stems and its beautiful fruit, far excelling, in richness of flavor, as a sweetmeat, many kinds of imported fruit for which we pay liberally; the dogwood, too, whose crimson flower stems, even in the autumn and winter, are so ornamental and make such pretty additions to winter bouquets; the prickly ash, whose pretty leaves and dark red berries are so highly pungent and aromatic. And many other perfectly hardy shrubs might be named, which would add more to the real beauty of cultivated grounds than numerous plants which we procure at great cost, and care for with trembling uncertainty as to results.

All who have visited Manitou Springs, Colorado, must have been impressed with the beauty of Dr. Bell's place, just at the entrance to the town, but all may not have realized that much of this beautiful effect is produced by the elegant shrubbery which embosoms this lovely English home.

A circular clump of shrubs, just where nature placed them, carefully protected

from injury by a low stone coping, stands directly in front of the gateway in the center of the carriage road. Driving around this striking ornament you enter the grounds and behold with wonder the fine effect produced by a tasteful judicious arrangement of native shrubs and making the beautifully kept lawn glorified by a bed of brilliant blossoms, the whole scene is so enchanting that you involuntarily exclaim, "charming, exquisite," and feel that your æsthetic taste is fully met and that you are taking in a picture so perfect, so restful, that even when vacation is over, and toil comes again, memory will retain it and it will become to you a peaceful oasis, where your overworked mind may find rest and refreshment.

All this is in marked contrast to the usual stiffness and monotony in the decoration of grounds which costs so much money, and yet does not satisfy the eye of a true lover of the beautiful.

It is plain that the point aimed at in these remarks, is that we are neglecting the beauties so lavishly bestowed upon us by nature, and reaching out after exotics and rare things at great expense of time, money and anxiety, while half the outlay properly used in cultivating what is ready to our hand, would make our grounds a joy and praise throughout the land.

We have great reason to hope and believe that the æsthetic craze over which we all laugh so heartily will have the effect to do away, in a great measure, with the artificial and ungraceful in our dress, and furniture, and lawn decorations, and introduce in its stead something really and instrinsically beautiful in its appropriateness to the place and uses for which it is designed.

FERNS.

I have chosen this subject, not because I know much about ferns, but because I love them, and think that of all the beautiful delicate things that God has made to gratify our æsthetic tastes, they are the most exquisite, and because I would have others love and appreciate them. A few years ago, while on a long visit to that beautiful kingdom in the blue Pacific, whose "islands lift their fronded palms in air," I saw ferns everywhere, and was told that there were to be found in that country one hundred and fifty varieties of this graceful family. From the great tree fern, the stalk or trunk of which is as large as a man's leg, and from which the natives procure a soft silky substance with which they fill their beds and pillows, to the delicate *Asplenium Multisectum* or lace fern and the diminutive *Trichomanes*. In the valleys, on the mountain sides, down in the craters of the spent volcanoes; lifting high their plumy tops in the flower borders of beautiful lawns; or grouped together in elegant grotto ferneries as the central ornament of highly cultivated grounds, everywhere, and all the year round, these feathery beauties, personification of grace and delicate loveliness, can be seen and enjoyed in that paradise of beauty, the kingdom of Hawaii. I noticed with great interest the large birds-nest fern, with its great lanceolate leaves growing in a perfect circle, enclosing and keeping from harm the tiny leaves curled and nestled in the center, like little callow birds, the *Nephrodium latifrons*, with its yellow-brown fruit so regularly placed around the edge of the leaf as to simulate very perfectly diminutive buttons on the trimming of a lady's dress, the *Trichomanes meifolium*, so like a perfect little tree, and the graceful *Cystopteris fragilis*, so aptly representing refined gentility. Then there were the endless varieties of *Asplenium* much of the year, heavy with brown fruit, as the spores of the fern are called; the *Polypodium;* the pretty

Marattia douglassi, with leaves regularly serrated like the leaves of a rose-bush; the *Achusticum* with its many varieties; the *Davallia pyxis* and the *Asplenium fragile* or walking fern. These are but a few of the large family of plants so interesting to botanists, and so full of beauty even to the uninitiated. I saw also the stag-fern of Australia growing from the smooth trunk of the royal palm; it is secured by fine wires around the tree and soon becomes a parasite, when the wires are removed and it excites great wonder in all who see it until what seems a freak of nature is explained to them. The leaf is large, lanceolate and not very ornamental, mainly interesting from the readiness with which it accommodates itself to its new home and surroundings. There is also an edible fern found there, the root and stalk of which, I was told, are very palatable and nutritious. A lady living in Honolulu has given much time and attention to the study of ferns, and has made the collection and preparation of them somewhat profitable. She has sent the varieties of Hawaiian ferns to naturalists in almost all the civilized countries on the globe, and has received in return specimens of the different species to be found in these countries, so that her collection is, perhaps, one of the finest to be seen anywhere. All are perfectly classified and preserved in such a way that they can be studied and enjoyed. One can spend many days looking them over and wondering at the infinite variety of beautiful, graceful forms.

I am under life-long obligations to this dear friend for a fine collection of Hawaiian ferns which she prepared and gave to me for a birthday present, while enjoying my "*dolce far niente*," in beautiful Honolulu. They are elegantly mounted, finished up with the many hued mosses of the islands, properly classified and locality named. This group of delicate loveliness, is "a thing of beauty and a joy to me forever."

I do not know that ferns could be successfully imported from the Pacific Islands and raised in this climate, but I do know that we have in Minnesota a great variety, and that their cultivation would add much to the beauty of our lawns and our window gardens, and if this paper should stimulate some young and enthusiastic floriculturist to turn her attention to it I shall be much gratified. Were this the morning, instead of the evening of my life it would be a real delight to me to make it a specialty; as it is, I am trying some new varieties from Colorado, and am doing what I can to make them flourish. One of them is the smallest fern known to botanists; it was procured in "Queen's Canyon Glen Eyrie," and is exquisite in its diminutive beauty. I have also sent to Wisconsin for roots, for the spring, having learned that in the woods near one of the mission stations there, ferns abound in great variety; and can there be a prettier ornament to fine, highly cultivated grounds than a flourishing fernery? So possible and easy too, where watering facilities are abundant. Great taste may be displayed in arranging ferns, either with rock-work or without; some other plants such as begonias, water-ivy, and many varieties of mosses bring out the ferns and make a beautiful blending. True our seasons are short, but we have many hot days, when the sight of pretty, cool looking ferns on the shady side of the lawn is wonderfully pleasing and refreshing. Far be it from me to discourage the æsthetic furor now so prevalent, for although as in many other new things its votaries are going to great extremes, and frustrating in a great measure by their mistaken zeal the intentions of those who set the ball rolling, yet I am convinced that when it subsides, it will leave some good

results, and it is well to let it run on, and run out. Yet let me say timidly, and in a whisper, that I cannot but think that a beautiful fern, fresh from the Almighty hand, is more truly satisfying to the pure, elevated taste than a stiff Japanese fan, or a dilapidated tea-pot.

Pardon a digression while I tell a story, in point, which all may not have heard: A young married couple, intensified æsthetes, had procured at great expense, and in the face of difficulty and discouragement, one old, discolored and badly cracked tea-pot—very rare and valuable, a bit of satsuma, for aught we know Placing it very conspicuously among their collection of quaint old things, they stepped back, and, with folded hands and uplifted eyes, gazed upon it in silent awe. At last, the young wife found voice to say, with a tremor in her tones which bespoke heartfelt emotion, "Algernon, beloved, let us trv to live up to it."

Now if a desire to be truer, purer and nobler can be stimulated by an infirm old tea-pot, what might we not predict as the effect of beautiful ferns, the perfect work of Him who put into our hearts the love of beauty, should they once become the fashion?

There will be a reaction some day; the old disjointed things, the contemplation of which now fills some hearts almost to bursting with admiration, will be remanded to the garret, the dark closet, or the dust heap; and then will come a yearning for something really fresh and beautiful to fill the void. Let us be ready with our ferns and pretty, graceful plants to catch these beauty lovers on the rebound, and satisfy their yearnings. It may be that thus a new era of æsthetics will be inaugurated and hearts may be filled with healthy aspirations to live up to the lessons our Heavenly Father inculcates, through the beautiful "voiceless teachers" He has scattered in such rich profusion all over the world.

Mr. Underwood moved, that in consideration of Mrs. Van Cleve's long and intelligent work in horticulture, she be made an honorary life member, which resolution was adopted.

EVERGREENS FOR THE PRAIRIES.

BY G. W. FULLER.

Prairie and evergreens. These two words suggest all that can be said regarding both the beauty and utility of setting evergreens on the prairies. But two or three questions may be considered briefly perhaps with profit. Can evergreens be successfully grown on the prairies? This question is easily and satisfactorily answered by the fact that they are now growing and growing well on all varieties of prairie soil. Ten years ago the coming spring, I began in a wheat field where not a tree or shrub of any kind was growing, or had ever grown, as far as we know, and now I have thousands of evergreens as healthy and vigorous as in their native forests. Among these are the Balsam Fir, Norway White and Black Spruce, Scotch White, Austrian and Norway Pine, the Arborvitae and Hemlock.

What kinds are best? The Austrian Pine I should reject entirely. While it is quite tenacious of life, and makes a brave fight for it, yet the Scotch and White are so much better, it is hardly worth while to have anything to do with it. The great objection to the pines for general planting, is the great loss, unless the digging and

setting is done by careful and skilled labor. Their roots are not fibrous, but few and coarse, and very little exposure to wind or sun ruins them. But once fixed in their place and growing, both the Scotch and White pines are "just splendid, "and good for ages. There is some objection to the Norway Spruce, because it more or less sun-burns and looks badly for a while in the spring, espeeially after a severe winter, and for a few years after it is transplanted. But they are very tenacious of life, are easily transplanted, and if half cared for, very few fail.

The first two years of my experiment a lot of Norways were sent me so badly sun-burned that I was strongly tempted to throw them all into the fire—as I did part of them. But the thought occurred to me, experiment with them ; see what they will do. I accordingly set them out carefully, cut them back severely, watched them for two years doubtingly, but finally most of them gathered courage and strength, and have made a success of it. And a year ago I sent one of these same trees to Wilmar, and they wrote me it was the finest Christmas tree they ever had.

The White Spruce is rather of a myth with me. For ten years I have been buying the White Spruce from one to six feet high, have never sold but one to my knowledge, and yet have not one on my grounds over a foot high. Of Black Spruce I have plenty which does very well, if you cannot get anyting better, and is really very fine, especially when small. Arborvitae is specially designed for small hedges, and I am inclined to think it ought to be planted more largely for all purposes. The Hemlock is very modest on the prairies and wants to be kept in the shade. Were it not for the loss in transplantiug, the Scotch Pine undoubtedly should stand first in the list. But as it is I think the real order of value is Norway Spruce and White Spruce, if the real thing can be had, Balsam Fir, Scotch and White pine, Arborvitae.

When to plant ? There are but two seasons for setting out evergreens. The first and best is in the spring, from the time the frost is out of the ground sufficiently to set them, to the time when they are beginning to grow. For large trees the latter part of the season is the best. The next best time is just after they are done growing in July or August. I have no confidence in moving evergreens after the first of September.

How shall we plant successfully ? In the first place *dig carefully*. Get good roots to begin with. Then keep these roots from sun and wind - not even let them get dry. In the second place have the ground in good condition and keep it so by good tillage until the trees are well growing. Then they will take care of thsmselves. In my light soil, I always water well where I set a tree ; but never afterwards, and pack down solid, so the tree will stand almost as firmly as before it was dug up. And finally, when the tree is well set, *mulch thoroughly*, so thoroughly that the ground will keep moist under the mulching the whole season. For small evergreens, good cultivation will answer the place of mulching.

As a single instance of the benefit of evergreens, I will state that a few years since, the only currants which grew in our whole county, as far as I know, grew on three rows of bushes which stood by the side of a double row of Scotch Pines, which were then eight to ten feet high. The row next to the pines bore a full crop, the second one half, and the third about one-fourth of a crop I enjoy my evergreens, though often during the growing season, I have the feeling that they are going to crowd me off from the premises, yet in the winter, when all else is apparently dead, they come to me with the beauty of life, and often clothe themselves gloriously with

the snow and frost gems, a single picture of which is worth more than they have cost.

DISCUSSION OF MR. FULLER'S PAPER.

Mr. Sias thought that in Southern Minnesota the Austrian Pine was a better tree than the Scotch Pine.

Mr. Jordan gave it as his experience, that the Scotch Pine was best for wind-breaks.

Mr. Dart understood the Hemlock was not hardy in Minnesota, and asked information regarding it.

Mr. Fuller said his Hemlocks at Litchfield were hardy and doing well. Mr. Gibbs said that he saw Hemlocks at Wilmar, five years planted, that were doing well.

Mr. Pearce said the Austrian Pine is the most tenacious of life of any evergreen, and that it was one of the finest for ornamental planting.

Mr. Underwood considers the Austrian Pine a failure ; said it discolored, lost its leaves, and was bad generally; but spoke very highly of the Scotch Pine, and of the White Spruce, which he said had been very successful with him.

Mr. Fuller had planted White Spruce and lost them all. Mr. Dartt found the White Spruce the most beautiful of evergreens, and best for ornamental planting, but for rapid growth and for wind-breaks, he preferred the Scotch Pine to any other. Mr. Fuller remarked that he never had a branch of Scotch Pine broken by the snow.

Mr. Harris asked Mr Fuller if the sapsucker injured his pines. He replied that it did not. Mr. Harris thought the Austrian Pine an admirable tree to clothe the bluffs along the river, but did not think it adapted to the prairies, and thinks the Hemlock equally valuable, but that they need a little protection.

Mr. Dart thas a dwarf White Pine that is a success on his grounds. He described it as a low habit, and especially adapted to ornamental planting. Mr. Sias said he had several hundred dwarf White Pine doing well, several of them seven feet high.

PLUMS.

BY J. M. UNDERWOOD.

Why is it that the cultivation of this most excellent fruit has occupied so diminutive a place in the deliberations and publications of our society I do not know, unless it is because the English varieties are known to be too tender for this climate, and nothing else was thought worthy of much attention or prominence. Possibly it is thought that the immortality won for it, by the illustrious "Jack Horner" on that

memorable Christmas, was sufficient tribute to pay to this particular branch of horticulture. It is time, however, that all that is known about them as adapted to our present wants, be brought out and placed on record in our reports as a ready reference for those who may wish to grow them, and I shall be glad to contribute what I can to this end

ORIGIN.—Prunus domestica, or what has usually been known as the cultivated plum is supposed to have come from Asia Minor, but as well as the varieties of this class are too tender for this climate. We must confine ourselves to our native varieties of which there are said to be two distinct classes, 1st, P—Americana or common native plum found growing from Maine to California, and too well known to need describing. 2nd P—Chicasa, or Chicasaw plum, a native of the S. W. States; but claimed by some to be hardy at the north, which is doubtful, however.

The "Wild Goose" belongs to this class, and is known to be tender, even in northern Iowa. It is claimed for some of our hardy kinds that they belong to this class, but my impression is that they all probably belong to P Americana, and it is this class of plums I wish mainly to consider. It is but a few years since any thought was given to their improvement, and perhaps the first that called attention to the development of new varieties was their hardiness and comparative exemption from the ravages of the curculio. Propagation—Plums are usually grafted on seedling roots, the same as apples, but it will not pay to use more than the crown graft—that is the first few inches of the root from where the top begins, as they start less freely than the apple and need the most favorable conditions for uniting and growth. When on their own roots they may also be propagated from root cutting, but grafting or budding is preferable as it enhances their early productiveness and certain it is that there is no dependence to be placed in seedlings from the pit. Roots for grafting may be raised, by procuring pits before dry and mix with damp sand, when cold weather comes submit them to alternate freezing and thawing. In the spring, if any are not cracked open they should be cracked with a hammer, before planting this will insure greater evenness in the rows, they may then be cultivated like other seedlings. Young seedling trees can be budded in August, or grafted very early in spring, and if done in season large trees may be successfully, top worked. Soil.—Any soil that is well drained is suitable for the plum. Orchard cultivation; 1st, they should be set one rod apart each way, and like every thing else, to do well should be thoroughly cultivated, and he who plants them in a cramped place, near large soft maples or other trees that already occupy the ground or in the sod need not expect much fruit. Pruning—They do not require much pruning except to head back the long protruding limbs to make them throw out laterals, and form a round top that will not split to pieces with heavy crops of fruit or blow off, with hard winds, curculio. While it is true that P Americana is comparatively free from disease and the ravages of the curculio, it may be well to note that thorough cultivation is one of the best ways to prevent the working of this little pest. It is also recommended that to smoke the tree with coal tar two or three times a week, during the fruiting season will keep the beetle and all other insects off. In the cool of the day they may be jared off on a sheet and so caught and killed. With us, however, they have never done much injury, and we have never paid any attention even to the few grubs we occasionally eat with the fruit unawares, thinking that if they can stand it we can.

VARIETIES.—Perhaps the first of the hardy varieties that was brought to notice is the Miner or Hinckley. It originated near Galena, Ill., and is reported as being a perfect success there and in some portions of Iowa, bearing hundreds of bushels of beautiful fruit, but with us and in many other places they will not bear. The tree is vigorous and healthy and they are the most profuse bloomers I ever saw, but the blossoms perish and we seldom get a crop. The tree makes an excellent one to top-work, and we were about to convert all of ours to this use, but the past season they bore several bushels of most beautiful and delicious plums, and we shall await further developments before changing the rest of the trees into other varieties. The fruit is very large, of a purplish red, flesh firm and bears handling well; quality excellent.

For an early plum I know of nothing better than the Forest Garden. It originated on the Cedar River, near Cedar Rapids, Iowa. It is perfectly hardy, bears profusely, ripens from the 1st to the 25th of August, size large, being one to one and a half inches in diameter. Oblong round, color mottled red and yellow, skin thin and juicy, very sweet and rich. The "Weaver," also a variety originated in Iowa, is a remarkable departure from the other varieties. It ripens two or three weeks later than the Forest Garden, and their peculiar shape and blotched appearance will make you think that they are a worthless thing, until they are more fully developed, when they gradually assume a gorgeous appearance, and I can hardly conceive of a more beautiful show of fruit than the trees present as it becomes fully ripe. Its most remarkable feature is that it is a perfect free-stone and the flesh is as firm as a peach. Perhaps these two varieties I have just mentioned are worthy of a place at the head of our list of plums, but the DeSoto, Brainard, Harrison Peach, Hoag, Elliott's Egg, and others are all worthy a trial.

MARKETING.—Of course, in seasons where there is an abundance of wild plums, there is not so good a demand in markets for an ordinary fruit, but any one that will put into market in neat clean crates, any of the improved sorts will always command a ready sale and good price, some having reported as high as $6 a bushel for twenty-five bushels.

NEW VARIETIES.—Like every other variety of fruit known to horticulture, new varieties are rapidly springing up to demand public favor and it is the duty of this society to chronicle the origin and particular merits of each, as they are certain in the near future, to occupy a prominent place among the fruits of our State.

J. M. UNDERWOOD.

DISCUSSION OF MR. UNDERWOOD'S PAPER.

Mr. Dart said that all plum trees grown from the root are much better than the same variety grafted, as in this case he could propagate from the suckers, and know just what you were getting.

Mr. Underwood said it was impracticable; that we could not propagate a valuable root fast enough in this way. Mr. Jordan agreed with Mr. Dart except as to rapid propagation. He had secured a lot of Miner plum sprouts from Mr. Grimes, and at the same time he had set a lot of top worked young trees from different sources. The former are all doing well, while the latter killed back badly.

Mr. Abernethy asked about the Harrison plum. Said his were not bearing. Mr. Fuller replied that he had a tree seven years old, that had fruited the past season for the first time. Mr. Jordan had the same plum, but found that it was inferior to the Miner. Col. Stevens said it was first introduced here by Wm. Harrison, of Minneapolis. When first introduced, they were prolific bearers. The Miner is too late for our climate. Think the DeSoto the best. They do not sprout sufficiently to indicate that they are on their own roots.

Mr. Underwood root grafts plum same as apple trees. Mr. Dart propagates from pieces of root cut in two-inch lengths. Mr. Jordan says he both root and top grafts plums, but the grafting must be done early and very carefully. He does all grafting of plums before sap starts.

Mr. Harris explained propagation by roots. He digs roots in the fall and preserves them in dry sand in the cellar. In the spring he cuts the roots into pieces two inches long, and plants them out under glass, using saw-dust as mulch.

Under discussion of seedling apples, Mr. Gibbs showed leaves and wood of three varieties from Mr. Peffer, accompanied by the wood from parent tree, to prove that by the leaf and wood the parentage of a seedling can be traced. Mr. Jordan said he saw Mr. Forster's seedling at Chatfield, and pronounced it about the same hardiness as the Fameuse. He had grafted first cions from Pickett's seeeling. Mr. Pickett said this tree grew from seed of the Haas ; don't think it perfectly hardy. Said he did not think much of the Clawson seedling. Said he had a fine hardy seedling, but the fruit is inferior, which proves that we must try a great many before we get a good one.

Mr. Gibbs said there were specimens of the wood of Mr. Forster's seedling, of three years' growth, on our tables. It showed well, better than any Fameuse he had seen, and he thought it a variety worthy of trial. The quality was good, size and color not bad, and it was a keeper.

Mr. Jordan said that he had most of Mr. Gideon's fruit. In answer to a question regarding Mr. Gideon's new, wonderful seedling, he thought it the Wealthy, but the tree was reported dead.

Mr. Harris said the old original Wealthy was dead, but that a young tree had sprung up from the roots and was rapidly making a new tree.

Discussion of the question " Where shall we draw the line between agriculture and horticulture," Mr. Grimes defined horticulture as referring to the culture of garden crops. His line would include all apples and small fruits and garden vegetables.

Mr. Harris thought that in our meetings for exhibition, we should admit all garden vegetables and root crops.

Mr. Dart said that in our meetings for discussion, he would be in favor of gaining time by shortening the list of subjects for discussion, and include fruit and flowers only.

Mr. Pearce said it was best to confine ourselves strictly to fruits and flowers, and continued that we were passing over important questions much too superficially. We ought, in the discussion, to go to bottom facts, and when we get through, be considered authority, and that we had not time to discuss all the products of the earth.

Mr. Harris said that until we had a State Agricultural Society, in fact, as well as in name, we had better discuss potatoes and cabbages, for if we do not, no one else will.

In closing the discussion, Mr. Gibbs said:

We use the term *horticulture*, not because it expresses comprehensively and exactly what we mean when we speak of the arts our Society is designed to foster, but because it comes nigher to it than any other word we have. Horticulture is the cultivation of gardens. A garden is an *inclosed* place, devoted to the cultivation of herbs, plants, flowers, vegetables, or fruits, one or all. We have the idea embraced in the word from the habit of ancient pastoral nations of inclosing small places for domestic gardening, while the whole country outside was left open for the range of their flocks and herds, from which they derived their principal means of existence. The name we have from the Romans—from *hortus*, a garden. In the American sense, an orchard is not a garden, neither is it horticultural, strictly speaking, unless inclosed so that it may be called a tree garden; yet as orcharding as an art generally practiced in this country, entirely separate from gardens, is the most extensive branch of industry in which our Society is interested, and as its own name includes nothing else, we place it under the general term, *horticulture*, as an accommodation. I speak of this to show that in drawing the line between agriculture and horticulture, we must not undertake to draw it too straight or arbitrary, lest by so doing we shut out from our horticultural inclosure our uninclosed orchards. I suppose the real question is whether we should enlarge or restrict our range of topics. If we retain our name, consistency requires us to give free scope to all gardening, and necessity obliges us to retain all there is of orcharding. We cannot afford to be merely *pomological*, for there is not at present enough of fruit culture to occupy our attention and secure sufficient popular interest in our Society, and for the further and conclusive reason that it would exclude, besides all there is of kitchen or market gardening, the flowers and ornamental plants which are the fringe and perfume of our whole business.

Now then where shall we draw the line? In reference to exhibitions and premium lists, to suit our conditions here in Minnesota, I would say, draw it so as to include all orchards and all gardens, fruit gardens, flower gardens, vegetable gardens, seed gardens, herb and plant gardens, and as many of the leading products of our farms as can be conveniently exhibited at our meetings and brought within our means. The tables were spread according to this plan at the fall meeting of this Society last September, at Lake City. Grains and vegetables were invited and brought in, and the farmers who contributed them were made to feel at home in the Society, whether

they had fruit or flowers to exhibit or not. Their admission there on an equal footing with other contributors, and the cordiality with which they were received, converted such of them to horticulture as had not been awakened to it before; and I submit to all our members who were present whether, even in view of the abundance of the horticultural display, which might or might not be so easily got together again, they would regard such a meeting as quite so successful with the agricultural branch left out. Living there among farmers and knowing them well, I can say that they were astonished at the exhibition of fruit, and some of them who had been previously indifferent to fruit culture or discouraged with it, went home with new views and more hopeful thoughts on the subject.

Regarding topics for discussion at our meetings, we are obliged to narrow our range for want of time; yet here perhaps we can find room occasionaally for a paper on special branches of agriculture, and whenever our secretary can accommodate his programme to it, I would advise, as an experiment, that it be admitted.

Mr. Grimes presented a resolution which was adopted, that our exhibitions and discussions should include fruit, plums, plants and garden vegetables.

The committee on Mr. Emery's resolution reported as follows:

The undersigned committee to whom was referred the resolntion by Mr. Emery relative to the appropriation for the experimental fruit farm, under the supervision of Peter M. Gideon, having had the matter under consideration, beg leave to report, recommending that in the absence of any one at this meeting representing the State University, the subject be postponed until the next annual meeting.

Respectfully submitted,

F. G. GOULD,
OLIVER GIBBS, JR.
R. J. MENDENHALL.
Committee.

DISCUSSION.—"Will the Wealthy top-worked on hardy, free growing crabs succeed as an orchard tree and prove profitable?"

Mr. Sias thought that it would, his Wealthies on Siberians were bearing good. Mr. Jordan said he was perfectly at home on the subject. To say, that any one variety was a success grafted on all hardy stocks was more than he believed.

As a rule he thinks it a failure, though in some instances a success. Said the Wealthy killed almost universally on the Hyslop and Transcendent. It does well on Early Strawberry and on some of the Siberians.

If we can find congenial wood for top grafting, stay by it, and use it all the time. No tree is perfectly hardy on all hybrids; thinks the Malinda a perfect tree on Transcendent.

Mr. Emery said they had perfect success grafting Wealthy on Transcendent, the union was perfect. Mr. Jordan admitted that it worked

readily, and that the junction was good, but said he had more trees of that sort killed in winter of 1880 than any other sort.

Mr. Grimes said Mr. Gideon grafted a number of Wealthy in Transcendent, and gave him trees that were yet alive growing and doing finely, the stock and graft of the same size, and making uniform growth, so that the junctions could not be detected.

Mr. Dart said with him top grafting had been a failure. He believes a hardy stock will impart some of its qualities to a more tender cion, though he is not sure, as he has had such cions kill as badly on hardy stock as on their own roots. Top grafting, so far as profit is concerned, is a failure. Defined top grafting as limb grafting.

Mr. Jordan said that in other localities than his, he had evidence that the Wealthy was a success, top worked on Transcendent.

Mr. Gould did not think the Wealthy would ever be a success top grafted on the Transcendent, from the fact that the new cion always blighted, no matter whether budded or grafted. He had known of successful grafting on Siberians.

TUESDAY EVENING.

SPUR PRUNING GRAPE VINES.

BY C. H. GREENMAN.

Mr. Greenman's paper was illustrated by the cutting of vines before the audience, and much oral and practical explanation, not included in his paper, which is as follows:

Practical grape growers understand all the operations of training and pruning grape vines. My contribution at this time is designed for those who desire to raise this desirable fruit, but are deterred from doing so by the idea that there are difficulties to surmount in training and pruning—those who are confounded with such terms as cones, shoots, spurs, laterals, &c., &c., and without an ocular demonstration. These terms are liable to be misunderstood by the beginner. A grape vine consists of one or more cones springing from the roots, with nodes or joints. From these joints a bud appears on alternate sides of the cone, that portion of the vine which these buds produce are denominated shoots. At the junction of these shoots with the cone are accessory buds, which, when grown are called laterals. When the cones are pruned, the portion left are called spurs. Hence spur pruning consists in cutting away the shoots and bearing grape vines in such a manner as to leave a portion of each shoot attached to the cone. Before proceeding to demonstrate the manner of procedure in pruning, allow me to say that there are a number of requisites for the successful cultivation of grapes. Training and pruning are indispensible. Neglect this, and failure is sure to follow. Thorough cultivation is necessary. The stake system of training facilitates this by allowing the horse cultivator to run both ways, thus keeping the soil loose and mellow. With the single stake, most cultivators adopt the annual renewal system of pruning, while the ordinary trellis allows one to mark the vineyard only one way. The most perfect bunches are nearly always found upon shoots

from wood of more than one years growth. Hence the spur pruning I consider the most desirable whether trained to stakes or otherwise. In order to get the vines in proper shape, the system commences with the first pruning, which is at the end of the first seasons growth, when the vines should be cut back to three buds. The following year only one cone should be allowed to grow, and at the second pruning is to be cut back according to the strength of the vine. When all are strong the cones may be cut to four or five feet long, and will be denominated a fruiting cone as shown in fig. one. Figure two shows the same cone in fruit. At the end of the season,

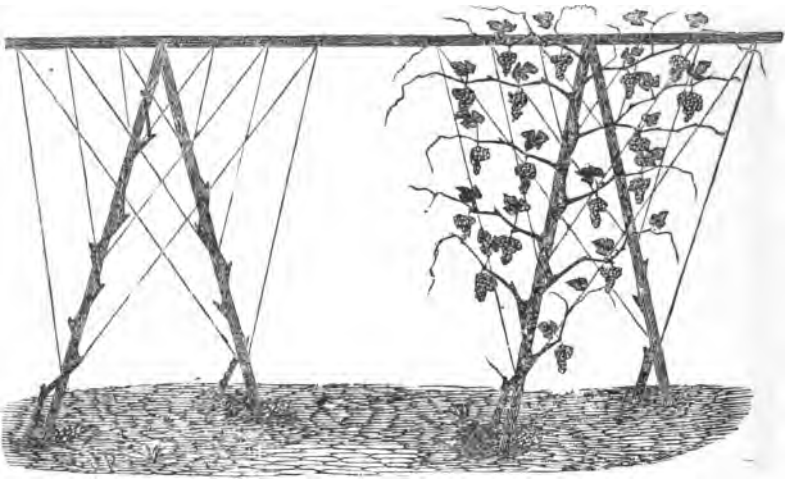

Fig. 1. Fig. 2.

cut the shoots back to two or three buds, as shown in figure three. From each of the buds on these spurs a shoot will appear, bearing the fruit, and will appear as shown in figure four, and in pruning all the wood is to be cut away, except one shoot, and

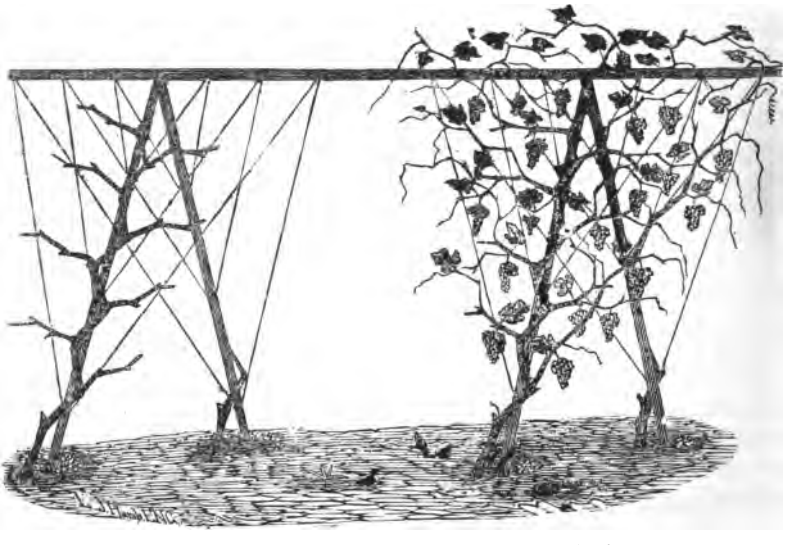

Fig. 3. Fig. 4.

this one cut to three buds again, and will appear substantially as shown by figure three, only that a portion of the old wood of the spur will remain, and will be lengthened a few inches each year. When your vine consists of more than one cone, each one is to be treated in the same way. When these spurs get so long as to be inconvenient, train a cone from near the base and proceed as with figure one. All suckers should be kept off, and not allowed to grow except for a renewal cone.

Mr. Gould thinks that though methods of pruning might differ, the results would be about the same. He would leave one spur of six buds on the leading shoot, and prune all other spurs back to one bud.

Mr. Greenman said he found the earliest grapes nearest the ground; the largest ones on the new wood of the second year's spurs. Said further, that the farmer or any one else who plants grapes must not expect a crop unless the vines are pruned of their superabundance of wood.

Mr. Harris said he would buy two year old vines with strong roots. He illustrated his system of pruning, which differed but little from Mr. Greenman's, except that he practiced the renewal system.

Mr. Greenman objected to the renewal system, on strong growing varieties, because the canes got too large for the number of buds. Mr. Harris thought the renewal system the best for farmers on account of its simplicity.

Mr. Emery said, as a matter of interest, that $800 had been realized from a single acre of grapes.

TULIPS.

BY ANNA B. UNDERWOOD.

Minnesota is a grand good State to live in, in spite of the extremely cold weather, that is so trying to the comfort and good nature of its inhabitants; and even these trying periods may be pleasantly passed, if ample provision has been made for warmth both in and out of doors. But this wintry weather does not last forever, not over six months of the year, and the balance of the year is so full o delights and pleasures, that compensation in full is received for the dreary period of waiting. Rich and varied as the spring and summer months are when left wholly to Dame Nature's care, still with a little assistance rendered at suitable times, and as needed, she will repay a thousand-fold. The spring months are particularly full of enjoyment, beginning with the earliest days, when the tiny blades of grass begin to show themselves, and the buds on trees and shrubs having heard the welcome news that it is time for them to awaken, and to work, begin to open, gladdening the eyes that have tired so of the cold and dreariness of winter. And what a brief space of time it is until our bluffs, prairies and valleys are reveling under a beautiful covering of soft green—and trees and bushes so lovely in their fresh new outfit. The contemplation of these beauties is quite satisfying for awhile and then the eye craves more *coloring*, and the woods and fields are invaded in pursuit of the earliest spring blossoms, that have the strength and hardihood to come forth from their snug retreat before the frosty days are fairly gone. But oftentimes the woods and fields are too far away for many to avail themselves of this glorious treat of hunting and finding the early wood flowers. An effort must be made to secure these and similar pleasures nearer home, and the flower garden is selected as the scene of earnest endeavors to gratify this love of variety. Some of the wild beauties can be transferred to the garden and do well, while others are quite impatient over the change and languish and die—and even those that do thrive always look out of place in the garden. It is better to have a little neglected *natural* corner of the lawn, and then

coax these early harbingers of spring to make their home there, where they can come and go at their own sweet will.

There are a goodly number of early flowering bulbs and plants that with but very little care and thought bestowed upon them, will abundantly repay every effort made by brightening the garden with their showy blossoms, that would otherwise present a dull and bare appearance. Among these early bulbs and plants may be mentioned the blue grape, hyacinth, iris, crocus and tulips. If a really brilliant, showy bed of flowers is desired, tulips will furnish it. Before the frost is fairly out of the ground a close inspection of the bed will disclose the brown tips of the leaves pushing out of the ground. The last that was seen of the tulips the previous fall was some little brown bulbs, with no roots and showing no signs of life whatever. When did they grow? While the ground was frozen solid; for surely they had no time to push themselves through three or four inches of soil after the frost was gone! But there they are, and how fast they grow! As soon as the leaves are up two or three inches, a sharp eye will detect the buds nestling in the center of each cluster of leaves; and now the interest deepens in watching the rapid growth of these flower buds. The flower bed is already handsome, covered with the green leaves and buds, but there is something richer in store for the watcher—a few days more of waiting and then patience is amply rewarded! The bed is simply gorgeous with the brilliant blossoms; yellow, white, red, orange, purple, two or more of these colors oftentimes combined in one flower. And then the fragrance of some of them is truly delightful. Care must be taken not to introduce the nose too far into the cup of the blossom in search of the fragrance, or the flower in joke will cover the tip end of it quite profusely with the powder kept always on hand to decorate the unwary. If no severe rain or wind storms prevent, the tulip bed will be a "thing of beauty," for from three to four weeks and perhaps longer, if both the early and late varieties are planted.

To attain the best results with tulips in bed planting (the easiest and consequently most satisfactory way of planting) the following suggestions are offered:

The bulbs must be obtained in the fall, and planted in this State in October.

Tulips do not require very rich soil, but still the soil must not be poor. Light sandy soil well enriched yields the best bulbs and blossoms.

Have a fancy shaped bed cut in the lawn, and procure enough bulbs to fill it. It may cost several dollars, but that is all the expense it need ever be again, as they propagate freely. If the soil is poor, have it removed to the depth of about twenty inches, and replace with good soil, putting in about one-eighth old, thoroughly decomposed cow manure, and a little sand, if the soil should be adhesive—thoroughly incorporating these materials. If too highly manured, the flowers will make a rank growth, but they will not be as fine as if "just right."

Mark the bed regularly in circles or rows according to shape or bed, laying the bulbs on the ground so that they will be about seven inches apart in all directions. Then with a dibble or sharp-pointed stick, make a hole at least four inches deep. Place the bulb in right side up. Some propagators recommend putting a little sand under the bulb and a little over it. Then cover with earth, pressing down carefully.

If the soil is hard, it should be spaded deep and made very fine and light. The bed should be bordered by boards, brick, or stone, to prevent the grass getting in and choking the bulbs. After all this is done, and before heavy freezing, cover the ground with coarse manure and straw. This is not absolutely necessary, as the bulbs will grow and blossom, but they will give much larger bulbs if treated in this way, and consequently the leaves and blossoms will be much finer and larger.

In the spring, remove the straw gradually, uncovering a little at a time as the disappearing frost will admit. Then as the little brown points begin to show themselves, with a garden trowel or old knife, stir the ground up carefully, mixing in well the fine manure left on top. Be very careful in working among bulbs not to cut the tops off, nor throw out the bulbs. The ground should be kept well loosened all the time they are in leaf flower.

In early spring procure some choice petunia seed, sowing it in a box in the house or in a hot bed. When the tulips are through blossoming, stir the ground as deeply and thoroughly as you can, without disturbing the bulbs, then set the petunia plants in between the tulips about eight or ten inches apart. Take good care of these for two or three weeks, watering and shading if necessary, and keeping the ground well stirred. In an incredibly short space of time the bed will be a mass of bloom. Again petunias are preferable to any other annual, on account of their early and constant blooming, and being of a rambling growth, soon cover the ground entirely. It requires no care after the first two or three weeks, and for a show bed on the lawn it has no equal for same expenditure of time and money. Don't put anything but annuals on the tulip bed, for in taking them up in the fall—supposing they were ger-

aniums, the ground would be too much disturbed and the bulbs liable to be thrown out. Every fall cover with coarse manure and straw. In the spring, proceed as before stated, taking off the dead petunia stalks, and without doubt every one trying the experiment, will unite in proclaiming the tulip as the grandest flower of the early spring. A word with regard to varieties for planting. Our florists' catalogues are extremely bewildering in the long lists of named varieties which they offer, and still more bewildering are the prices they ask for some of the choicer varieties—particularly so when $10.00 is set aside to fill a bed with tulips, and after scanning the long lists of named varieties,—the choicest ones are selected, the price carried out and then find that at $1 or $2 each, there will be no more bulbs than one can hold in his hand. It is a tax on ones ingenuity to make $10 cover a bed of several feet at these figures. But leave these expensive varieties entirely alone for the present. Take the cheaper varieties—they will give good satisfaction, and later on if it is thought desirable, the choicer varieties may be procured and planted in a corner of the garden, and when enough accumulated for a good sized bed, lay out another bed on your lawn, if large enough.

Tulips are divided into two general classes, early and late, and these are again subdivided into other classes. The early varieties flower on short stems; the later ones rise a foot or more from the ground before opening. In setting out, it would be best to have the late varieties in one bed and the early in another, as it would detract from the general effect of the bed to have the bulbs coming into flower at different times, keeping different colors separate. It would also be a good idea before purchasing to draw a plan of bed on paper, laying it off regularly, and decide just how many are wanted of each color to fill it.

The single varieties are the prettiest, most graceful; the double varieties strike one at first glance as monstrosities, and the eye instantly seeks relief in resting on the stately single blossoms. By having a bed of each of the different varieties, the succession of blooms may be made to extend over several weeks. Have a few of the ridiculous Parrott Tulips by all means if only for health's sake, their very homeliness is conducive to good digestion, for certainly one can't look at them without laughing at their grotesqueness and funny attempts at resembling a flower, and laughter is conceded to be a grand promoter of digestion and happiness.

Some propagators recommend taking the bulbs up every season after they are through flowering, but this would interfere with their being used for lawn purposes, as nothing else would be put on the bed until the bulbs were taken up, and then it would be too late to start other plants. This plan will do where they are planted out in nursery rows—but when they are in beds on the lawn, leave them undisturbed as long as they are doing well. When the plants become too thick and show signs of weakness, about the last of June or 1st of July, when the tops have died down, take the bulbs up carefully, letting them dry under cover. When dry, remove offsets and smaller bulbs. Wrap each large flowering bulb by itself in a paper, place in a box, and keep in a dry place until wanted for setting out in the fall. The offsets and smaller bulbs may be set out in a bed in the kitchen garden where they may perfect their growth for another season.

The tulip has been called the "king of florists flowers," and it certainly merits the name; coming at a time when flowers are so scarce, making the lawn so bright and cheerful. For some years past it has not been very popular—some more pretentious flowers but not more worthy, having absorbed the attention of flower lovers, to its almost utter exclusion. It is time that it is brought forward and given the place it justly deserves—as king of the early spring flowers.

DOMESTIC FRUITS IN MINNESOTA.

BY A. W. SIAS.

The florist, vegetable gardener and seedsman no doubt begin to regard this subject of apples and hybrids as somewhat hackneyed. But it should be borne in mind that ever since the establishment of the Garden of Eden, fruits have been first and foremost among the attractive and irresistible products of the horticulturist. The word irresistible is used because we do know that the "best regulated families," whenever an opportunity presents itself, will steal, unless supplied with home grown fruits.

THE APPLE, KING OF ALL FRUITS.—Downing says, "is most perfectly naturalized in America, and in the northern and middle portions of the United States succeeds as well, or, as we believe, better than any part of the world. The most celebrated apples of Germany and the north of Europe are not superior to many of the varieties originated here, and the American or Newton Pippin is pretty generally admitted to be the finest apple in the world." Downing also says, in "Duxbury, Mass., is a tree which in its girth measures twelve feet five

inches, and which has yielded in a single year 121½ bushels." While visiting orchards and nurseries in Western New York in 1876, we measured a tree of the Northern Spy variety, (it originated here) that was stock grafted some four or five feet high, the seedling below where the graft was inserted, and four feet above the surface of the ground was a trifle over thirteen feet in circumference, and above the base of the graft the Northern Spy measured plump thirteen feet six inches in circumference. Western New York is thought by some to be the finest fruit section in the world, but no foreign variety can approximate their native trees in size, or excel their fruits in quality. It was here that I first saw the Duchess of Oldenburg in bearing—some twenty-five years ago—trees, now, perhaps, thirty-five years old, and it is doubtful if to-day you could find one that would measure four feet in circumference. No varieties from Northern Europe have attracted much attention in Western New York, simply because their native trees grow so much larger, yield so much more abundantly, and the fruit as a rule is better in quality. I predict the day is not far distant when the same can be said of Minnesota. But we have good reasons to be a little proud of the Duchess if she is of foreign origin, and but the forerunner of something better, and as Josh Billings would say, its too much like "argering agin a success" to say aught against her. Of the Washburne seedling, S. H. Gaylord, an old and esteemed friend of Wabasha county, writes me under date of Dec. 8, 1881: "I called on Mr. Washburne to investigate the fruit and tree business. Unfortunately this being a year that fruit fails to keep, there was none to be had. I secured the desired specimen of wood, also the measure of circumference one foot from the ground, viz.: 4 feet 10½ inches, which you will see is larger than we supposed. You will observe that the wood is injured some. Mr. W. says last winter was the first it ever hurt. The fruit is a good cooking, tart apple, yellow, with red cheeks, and good to eat from hand. The bark on the trunk looks very much like a wild crab.

One of our committee on seedlings requested me to look into the merits of a new sweet apple that took the first premium as a seedling winter fruit, at our last State fair. We found the originator to this new candidate of public favor, W. Forster, living in the township of Orion, Olmsted county. He claims it to be a seedling of the St. Lawrence, and one might infer from the general appearance of the tree and fruit that its other parent was the Talman Sweet. From my short acquaintance with this seedling I am inclined to think the tree just a trifle more hardy than St. Lawrence and Talman Sweet, with fruit more tender and jucy than the latter.

J. S. Stickney, one of the most reliable horticulturists of Wisconsin, who represented that State at the American Pomological Society meeting at Rochester, N. Y., Sept. 17 and 18, 1879, said: "And here I may state, as showing also what is possible for us, that nothing finer, more attractive, or beautiful could be found on any table, than the plates of Wealthy and some four other seedlings, sent from Excelsior by our friend Gideon.' These were all domestic fruits. In a glimpse at Michigan horticulture, Secretary Charles W. Garfield says: "When Father Marquette and his Jesuit brothers paddled around our beautiful peninsula over 200 years ago, dropping here and there a few apple and pear seeds along with 'the seeds of the word,' they little dreamed of the great future that was indicated for Michigan in the thrifty growth of seedling fruit trees that were to spring up along their pathway. A few of these old trees are still found on the shores of Erie, Huron and Lake Michigan."

PEARS.--Downing says: "By comparing the robust vigor and longevity of many native pear trees to be found in the United States, some 80 or 100 years old, and still producing large crops of fruit, with the delicate trees of several new varieties now in our gardens from Europe, the superiority of the former becomes apparent. These varieties are delicate, not only with respect to their constitutional vigor, but they are also more susceptible to injury from the severity of our winter's cold and summer's sun. The high flavor of the Seckel pear, an American variety, as yet unsurpassed in this respect by any European sort, proves the natural congeniality of the climate of the Northern States to this fruit.

PLUMS.—Of all the different fruits indigenous to this country, there is perhaps none but what may be as successfully moved further from its place of origin than the plum. With this fruit, at least, it is domestic or none.

CHERRIES.—We know of know efforts having been made to domesticate, or rather to propagate, the cherry from seed in this State; hence, little progress has been made.

GRAPES.—Foreign grapes in the Northwest, we all know to be worthless, when compared with such domestic sorts as Delaware, Concord, Janesville, Roger's Hybrids and many others.

STRAWBERRIES —With me no strawberry has given as good satisfaction as Hart's Minnesota seedling. Wilson's Albany and the leading varieties of the country are known to be domestic fruits. Lastly

we find domestic fruits better adapted to our soil and climate, making larger, more durable, and productive plants. Moral, why run after strange gods?

GOOSEBERRIES.—Have we a foreign variety in this country worth cultivating? The Houghton seedling, origin Lynn, Mass., the American seedling, Downing's and perhaps a few other natives, are all that are worthy our attention.

CURRANTS.—Currants are no exception to the general rule that domestic fruits are ahead. A few years ago I happened to find, in a neighbor's garden, a seedling from our native black currant; they were very large and bearing heavy; I took seeds from them, and raised plants that for the past three years have born, double the amount of the black English and black Naples, with fruit as large, clustered longer, and we think, just a trifle better in quality.

HORTICULTURE AT THE STATE FAIR AT ROCHESTER.

BY JOHN S. HARRIS, SUPERINTENDENT

September 5th to 10th, 1881.

The State Fair of 1881 was held under many unfavorable circumstances. The net surplus of the previous fair (1880), was applied pro rata upon the unpaid premiums of the previous year, thus leaving the Agricultural Society without any funds in the treasury to guard against any contingency that might arise. The fair was held in the midst of a deluge of r in that had no parallel in the annals of our history, which had a tendency to deplete the attendance and cut off other sources of revenue. There was but one really passable day during the entire week, and a fee'ing seemed to prevail that the fair could end only in disaster. The weather was such that the visitors in attendance were forced much of the time to remain within the building, rendering it very inconvenient for exhibitors to set up and arrange their displays in a tasteful manner, and at no time could we see "joy and gladness" upon their faces, and several of the old exhibitors did not put in an appearance, doubtless owing to these and other untoward circumstances. Again, the season had not been a good one for most varieties of fruit, and especially of apples the crop generally was light, and owing to the extreme heat and drouth of summer and the depredation of insects, were not up to the usual standard of excellence. Notwithstanding all difficulties, the fair was a success and the horticultural department a credit to the State Horticultural Society, and to every individual member who contributed to sustain its reputation. Our thanks are due to the management of the State Agricultural Society for the very liberal premiums offered, the facilities afforded for making the exhibit, and the many favors and courtesies shown us during the entire week; also to the people of Rochester who gave us every aid and encouragement within their power. One of the serious difficulties we met with was procuring suitable plates, and we were compelled to resort to the use of paper and wooden ones, greatly to the detriment and appearance of the fruit. Right here permit me to suguest that our Horticultural Society do at once either provide plates for its members, or adopt a rule that every exhibitor shall be required to furnish his own plates.

The competition in the fruit department was spirited. The secretary's books show that three hundred and eighty-one entries were made and that there were fifty-nine competitors. I will here only note the larger collections. E. Wilcox & Sons, of LaCrosse, had a fine display of apples and crabs, and some young trees of fine growth. They showed about forty varieties of apples and seventeen of crabs and hybrids. Their popular grafted varieties of the apples were the best on exhibition. A. W. Sias, of College Hill Nursery, exhibited fifty-two varieties, many of them of Russian origin and Minnesota origin, and seventeen varieties of crabs and hybrids, and some young trees. The Jewell Nursery, Lake City, exhibited about thirty-five varieties of grafted apples, and something over thirty of Siberians and Hybrids; some of the latter were of large size for that class of fruits and of very superior quality; also four varieties of native plums and seven of grapes. E. B. Jordan, of Rochester, made a creditable showing of some thirty varieties of apples, and about the same of Siberians and Hybrids, and six of grapes, and a dozen fine nursery trees. Jordan is an old "regular" at fairs and makes a very tasty display. J. S. Harris & Son, of La Crescent, were on hand with forty-eight varieties of apples, 23 of Siberians and Hybrids, and 11 of grapes. M. J. Hovey, Rochester, showed a dozen or more varieties of fine apples and several of crabs. R. J. Coterell, Dover Center, exhibited about 25 varieties of very choice apples and four of grapes and a few of native plums. Mr. Coterell is one of the old pioneers who has been very successful with apples, but being a modest man, scarcely ever has justice done him in the awards made. S. Bates, of Stockton, exhibited nearly twenty varieties of apples, six of Siberians, and three of grapes. For the number of varieties comprised in the exhibit, this surpassed all others

for size, quality, and appearance of the fruit. The Olmsted County Horticultural Society, under the direction of A. H. Sias, showed about 200 plates of apples and other fruits. The Lake City Horticultural Society, under the direction of Oliver Gibbs, Jr., made a display of about 300 plates of fruit. This display was so well arranged that it was an attractive feature of the fair, and showed that the thirty-five farmers of Wabashaw and Goodhue counties who contributed the fruits are meeting with success in their tree planting, and the society is indebted to Mr. Gibbs for his indefatiguable efforts in their behalf that enabled them to secure the highest prize. This list includes only such as made large exhibits, but credit is due to every other exhibitor as well for the success of the fair.

The premiums arwarded are as follows:

APPLES.

Best and greatest variety, eight exhibits,	E. Wilcox & Sons, La Crosse, Wisconsin	1st	$20
" " "	A. W. Sias, Rochester	2d	15
" " "	E. B. Jordan, "	3rd	10
" " "	Underwood & Emery, Lake City	4th	8
" " "	S. Bates, Stockton	5th	
" " "	R. S. Coterell, Dover Center	6th	
Greatest and best display of Winter Apples, eight exhibits.	E. Wilcox & Sons, La Crosse	1st	10
" " " " "	Underwood & Emery, Lake City,	2d	8
" " " " "	E. B. Jordan, Rochester	3rd	
" " " " "	A. H. Sias, Rochester	4th	5
Greatest and best display Autumn apples, nine exhibits,	E. Wilcox & Sons, La Crosse	1st	6
" " " " " "	S. Bates, Stockton,	2d	5
" " " " " "	A. W. Sias, Rochester	3rd	4
" " " " " "	R. S. Coterell, Dover Center	4th	3

APPLES—SINGLE PLATES.

Duchess of Oldenburgh, 14 entries,	A. H. Sias, Rochester	1st	$2
	Underwood & Emery, Lake City	2d	1
Tetofsky, four entries,	Underwood & Emery, Lake City	1st	
	R. S. Coterell, Dover Center	2d	1
Fameuse, seven entries,	J. S. Harris & Son, La Crescent	1st	2
	E. Wilcox & Sons, La Crosse	2d	1
Haas, twelve entries,	Baker Harrison, Mt. Pleasant	1st	2
	M. Prentor, Lake City	2d	1
Wealthy, eleven entries,	S. Bates, Stockton	1st	2
	E. Wilcox & Sons, La Crosse	2d	1
Golden Russet, eight entries,	J. S. Harris & Son, La Crescent	1st	2
	E. Wilcox & Sons, La Crosse	2d	1
Plum Cider, nine entries,	Underwood & Emery, Lake City	1st	2
	J. S. Harris, & Son, La Crescent	2d	1
Price's Sweet, seven entries,	E. Wilcox & Son, La Crosse	1st	2
	Thos Mateerin, Glasgow	2d	1
St. Lawrence, nine entries,	Underwood & Emery, Lake City	1st	2
	G. A. Cook, Cook's Valley	2d	1
Walbridge, eight entries.	J. S. Harris & Son, La Crescent	1st	2
	A. Dwelle, Lake City	2d	1
Utter or Cooper, nine entries,	E. Wilcox & Sons, La Crosse	1st	2
	S. Bates, Stockton	2d	1
Tallman Sweet, ten entries	J. S. Harris & Son, La Crescent	1st	2
	Mrs. Amelia Heine, Wacouta	2d	1
Malinda, four entries,	E. B. Jordan, Rochester	1st	2
	Collins Pratt, Oakwood	2d	1
Siberians and Hybrids, nine entries,	E. B. Jordan, Rochester	1st	10
	Underwood & Emery, Lake City	2d	6
	J. S. Harris & Son, La Crescent	3rd	4
Plate Transcendents, 10 entries,	E. Wilcox, La Crosse	1st	1.00
	A. W. Sias, Rochester	2d	50

STATE HORTICULTURAL SOCIETY.

Hyslop, nine entries,	M. J. Hoag, Rochester	1st	1.00
	E. Wilcox & Sons, La Crosse	2d	50
Virginia, four entries,	E. B. Jordan, Rochester	1st	1.00
	S. Bates, Stockton	2d	50
Orange, nine entries,	Underwood & Emery, Lake City	1st	1.00
	S. Bates, Stockton	2d	50
Minnesota, seven entries,	P. Prenter, Lake City	1st	1.00
	Underwood & Emery, Lake City	2d	50
Whitney No. 20, three entries,	E. Wilcox & Sons, La Crosse	1st	1.00
	Underwood & Emery, Lake City	2d	50
Alaska, two entries,	J. S. Harris & Son, La Crescent	1st	1.00
Powers Red, three entries,	M. J. Hoag, Rochester	1st	1.00
	A. W. Sias, "	2d	50
Conical, seven entries,	Mrs. Agnes Trost, Lake City	1st	1.00
	Underwood & Emery Lake City	2d	50
Quaker Beauty, four entries,	Underwood & Emery Lake City	1st	1.00
	S. Hazlett, Lake City	2d	50
Maiden's Blush, eight entries,	Mrs. Agnes Trost, Lake City	1st	1.00
	E. Wilcox & Sons, La Crosse	2d	50
New Crab, five entries,	E. B. Jordan, Rochester	1st	2
	E. Wilcox & Sons, La Crosse	2d	1
Winter Crab, six entries,	J. S. Harris & Son, La Crescent	1st	2
	Underwood & Emery, Lake City	2d	1
Seedling Apples, all purposes,	S. Bates, Stockton	1st	5
Sweet,	A. W. Fountan, Frontenac	1st	3
Winter,	Wm. Forster, Chatfield	1st	5
Pears, single plate,	A. W. Sias, Rochester	2d	3

NATIVE PLUMS.

Best Collection,	Underwood & Emery, Lake City	1st	3
Single plate,	Underwood & Emery "	1st	2
Best Trees grown in Minnesota,	E. B. Jordan, Rochester	1st	10
	A. W. Sias, "	2d	5
grown out of the State,	E. Wilcox & Sons, La Crosse	1st	

GRAPES.

Best and greatest variety,	J. S. Harris & Son, La Crescent	1st	10
	Underwood & Emery, Lake City	2d	8
	E. B. Jordan, Rochester	3rd	6
	A. W. Sias, "	4th	4
Best plate Delaware,	Underwood & Emery, Lake City	1st	2
	J. S. Harris & Son La Crescent	2d	1
Concord,	Mrs. W. S. Newton, Pine Island	1st	2
	E. B. Jordan, Rochester	2d	1
Roger's 15,	Underwood & Emery, Lake City	1st	2
	J. S. Harris & Son, La Crescent	2d	1
Roger's 9,	Underwood & Emery, Lake City	1st	2
Creseling,	J. S. Harris & Son, La Crescent	1st	2
Northern Muscadine,	R. S. Coterell, Dover Center	1st	2
Janesville,	Mrs. W. S. Newton, Pine Island	1st	2
	E. B. Jordan, Rochester	2d	1
Clinton,	E. B. Jordan, "	1st	2
	S. Bates, Stockton	2d	

SWEEPSTAKES TO COUNTY AND LOCAL HORTICULTURAL SOCIETIES.

Lake Pepin, Horticultural Society	1st	50
Olmsted County Horticultural Society	2d	30

FLOWERS.

Greenhouse Plants,	J. A. Salzer,	La Crosse	1st	20
	Mrs. B. Welch,	Rochester	2d	15
	Mrs. Nesbit,	"	3d	10
Greenhouse Plants by Amateur,	Mrs. J. S. Fishbeck	Rochester	1st	15
	Mrs. A. H. Markham,	"	2d	10
	Mrs. Breckinridge,	"	3rd	5
Best display of Geraniums,	Mrs. R. Welch,	"	1st	5
	H. C. Butler.	"	2d	4
	J. A. Salzer,	La Crosse	3rd	3
Roses in Pots,	J. A. Salzer,	"	1st	6
Single specimen Plant,	J. A. Salzer,	"	1st	3
Basket cut Flowers,	J. A Salzer,	La Crosse	1st	3
Best display climbing vines,	"	"	1st	5
Gladiolus,	"	"	1st	3
Tube Roses,	"	"	1st	3
Floral design,	"	"	1st	5
Cactus,	"	"	1st	5
	Mrs. M. J. Hoag,	Rochester	2d	3
Verbenas,	Mrs. S. B. Welch,	"	1st	2
	Mrs. J. S. Fishbeck,	"	2d	1
Pansies,	Mrs. S. B. Welch,	"	1st	3
	J. A. Salzer,	La Crosse	2d	2

The flower department contained representatives of nearly everything that is cultivated in the greenhouse and conservatory, and proved to be one of the most interesting features of the fair. Time will not permit me to make a full report of the vegetable department. I will only say that it was full and complete, and a credit to our State. The great number of the newer varieties of vegetables shown, tell us that our gardeners and farmers are wide awade and progressive. I have neglected to mention that there were two large and well arranged horticultural exhibits in the railroad department; one by the Winona & St. Peter, under the direction of H. M. Burchard, and C. A. Whitney, assisted by Martin Cook, of Rochester, and the other by the St. P. & Manitoba railroad, under the supervision of A. M. Fridley. The first showed about 300 plates of apples and Siberians grown along the line of the road, and an endless variety of vegetables. The other contained less fruit, but a number of varieties of vegetables that were marvelous for their size and perfection. Ours is indeed a wonderful State for vegetables. Considerable difficulty is experienced in securing competent committees, and I think it would be well to have the committee on fruits appointed at the winter meetings of the Horticultural Society and to provide for their expenses. Some dissatisfaction is manifested because our Minnesota fruit growers are brought into competition with those of other States. Can this Society suggest any remedy while competition in the State Fair is left open to the world? The State Agricultural Society will no longer duplicate like premiums to exhibitors from other States.

A vote of thanks was tendered President Harris, who, as a member of the State Board of Agriculture, furthered our interests at the State Fair.

WEDNESDAY MORNING, JANUARY 18.

HARDY APPLES FROM SEED.

BY A. K. PHOENIX, DELAVAN, WIS.

What are, to-day most Western farmers rights as to fruit trees and fruits? (1.) To go without, (2.) once or twice each year to buy costly, often worthless imported trees and costly imported fruit. Yet they struggle bravely on in the same old road, annually taxing themselves in the aggregate, immense sums, vainly hoping that something better may turn up. What is comparatively the Western horticultural situation? Certainly depressed. To illustrate. In 1850 was a wonderful fruit crop, said to be the largest ever grown West, and with what result? At least at this section aside from what the owner's family and stock consumed, most of the beautiful apples, thousands of bushels rotted on the

ground! There was almost no organized preparation to save the crop, almost no buyers, barrels, cider mills or fruit houses, and farm help very scarce. Yet in the glut, there came to this station a carload or two of Eastern apples which sold at paying prices. Why? They were the best and best known winter apples, Baldwin, Greening, Red Canads, Tompkins County King, Esopus Spitzenburg, Peck's Pleasant, Northern Spy, of which none but the Northern Spy could be had here of home growth—and it was claimed that Eastern growth Northern Spy kept better. Some Wisconsin growers collared large lots of their best winter apples which kept splendidly over winter. But in market they could not compete with the ruling Eastern sorts and had to be mostly given away or fed to stock. No wonder many farmers "never would set out another apple tree" and even threatened to cut down their bearing orchards. The situation here in 1880 was similar to that of Western New York fifty years ago. Choice winter apples were then delivered to buyers at twenty-five cents per bushel, or gladly sold on the trees at twelve and a half cents per bushel. How is it there now? (1.) Their soil and climate for fruit thoroughly mastered. (2.) A complete assortment of the finest apples in the world in possession. (3.) All details worked out, markets, orchards, fruit buyers, hand pickers, fruit packages, fruit dryers jelly, preserved and canned fruit factories, cider mills, vinegar factories, shipping arrangements, favorable railroad and water routes and rates, markets and commission houses, all in organized working order. In the best fruit districts the apple grower has only to grow his apples, sell them at so much per bushel or barrel, or in the lump on the trees, and take his money. This is profitable, systemized organization, while here at the West, is almost as complete disorganization.

Why? (1.) Western climate not yet mastered. (2.) Eastern varieties, especially of winter apples failing here, we have neglected to grow Western sorts to compete with them. (3.) Having no foundation, no first-class winter varieties adapted to our climate, we have no superstructure, no first-class market fruit, fruit utilizing factories or market arrangements, very few nurseries, but missionary tree peddlers in plenty. For forty years have Western tree and fruit growers vainly tried to acclimate Eastern, Southern and European winter apple trees and fruits in our midst. Among the vast multitude of grafted winter varieties, I believe three thousand or more, there is, so far as I know, but one well at home among us. In tree or fruit, or both, they all fall short of Eastern varieties, crops and profits. The Eastern staple market winter sorts, Baldwin, Greenings, etc., were grown from seed, say one hundred years ago.

What progress has America made in the past century? Why then in cultivated apples is the whole country tied down to ancient Baldwin, Greening & Co.? Perhaps for the same reason we are in bonds to the Declaration of Independence. But I believe there is a better reason, the practice of grafting. Grafting is a good thing but too much grafting is bad. Since grafting, especially root grafting, came into use, a process which uses only the roots, throwing away the tops of seedlings, comparatively few seedlings have been fruited—and those that have borne have been almost everywhere overlooked, cried down, condemned because they were "nothing but seedlings," proved first-class in both tree and fruit, and quite at home in the West. In tree or fruit, or both, they all fall short of the accepted Eastern standard varieties, raised mostly, say a hundred years ago, from seed.

In my forty years of horticultural experience I cannot remember of even so much as one respectable premium offered for a worthy new variety of apples. Our grandparents said: "Seek no further," and too obedient, we have sought no further. Everybody could have the best grafted sorts, while nobody dared hope to raise better or even as good from seed. Grafted nurseries, grafted orchards, grafted apples were everything—seedlings East or West were nothing. And in our blind Western attachment to Eastern grafts we have taxed ourselves out of probably $2,000,000 a year, which, had we a set of worthy

WESTERN IRONCLAD WINTER APPLES

for every Western fruit-growing section, we could have kept in our own pockets. It is high time that we of the West declare our horticultural independence and try ts set up fruit-growing for ourselves. We begin as our forefathers began their revolutionary struggle for freedom, poor enough. We have the world, the flesh and the missionary tree peddlers to fight, but we realize that independence is best for all parties and for everybody. We want as soon as possible our own set of choice ironclad apple, pear, plum, cherry, etc., for all sections, uses and purposes. We want them wherever they are to be found, in foreign lands, in obscurity in our own grafted or seedling orchards. or in yet unborn generations of seed to be saved, sowed, the seedlings therefrom grow up fruited and the best sifted out, until we get varieties worthy of the glorious West. We are very grateful for, very hopeful of the splendid contributions to our list of hardy varieties from foreign lands, notably from Russia and China. We will fruit them, adopt the best, cross and hybridize them with our own, as I believe, in fine flavor, unequalled

American cultivated apples, and from the seed raise up a new cosmopolitan tribe of the very choicest sorts for grafting and budding. In our next selections let us embody more delicious fragrance, aroma, spice and variety of flavor.

How wide does the horticultural revolt extend? From Ohio and Michigan on the East to California on the West. Hardier trees with as choice varieties of fruits would be welcomed by the whole country. The entire Northwest wants ironclad trees enduring sixty below zero unharmed.

What foundation is there for this talk about choice Western ironclads, especially winter ironclads? We have now summer and fall ironclad Siberian crabs; ironclad Russian, as Duchess of Oldenburg, Tefofsky, Yellow Transparent, etc.; ironclad natives, as the Wealthy apple, and many hybrid summer, fall and winter Siberians, and old choice winter sorts like Blue Pearmain, Golden Russet, etc., almost ironclad, with many very hardy winter apple seedlings. In far northern ironclad orchards, from the Atlantic to the furthest Western bearing apple trees, we have the best reason to believe there are dozens of ironclad winter apple seedlings (and perhaps grafts) of the highest quality, only needing to be hunted out and propagated from buds and cions as rapidly as possible. Only iron-bound regions would naturally develop ironclads. So far as I know, our most northern apple regions have not, until very lately, been even looked into, and now are probably not one-hundredth part explored.

Given ironclads, can the West produce as fine apples for the markets of the world as the East? Most emphatically, yes. Under culture, Western soil certainly improves for fruit-growing; and Western apples, for high flavor, color and fine quality throughout, I have never seen excelled. Every needed fruit element is here, "lying around loose" in separate varieties, only waiting for us to give nature, the master workman, the opportunity to combine into new and more perfect seedling forms.

How are we to get the desired choice ironclads? As our forefathers got their (and our) best grafted varieties, by growing from the best seed millions of native seedlings, testing, and selecting out only the very best trees and fruits for given locations. By seedlings they got deliverence from inferior foreign varieties. Imitating their example we shall escape this galling yoke of bondage to sectional, tyrant varieties. Seedlings are nature's horticultural plaster casts, fruit studies, fruit pioneers mine, from which the best selections, one in one, or ten, one in a hundred or a thousand are the refined gold.

But why go back to the seed and through the wilderness of despised seedlings? Because there and nowhere else can we find what we want. Only in the seed and through the wilderness of seedlings can we escape present bondage in a worse wilderness of fruitless or inferior grafts, of worthless tree-peddling taxation. We now pay probably not less than two million a year for the privilege of doing without home nurseries, profitable orchards or a supply of first-class fruit, to say nothing of galling tree-peddlers tricks and impositions, which the present order of things enforces upon us. I submit that western men and women are not the ones to sit down in hopeless inferiority. We can do better or try to. We can stop throwing away money, time, labor on worthless, tender, anti-western trash and begin back at the seed, the root of the whole matter. Another important point we have but touched upon. At least three-fourths of all our orchards should be winter ironclad varieties. Now it may be our ignorance, but we do not know of so much as one strictly ironclad winter apple tree offered in any of all American nurseries! Yet we hope, we believe there are already several hopeful sorts promising to be winter ironclads now under full trial and propagation.

In this dilemma what can we do? Stop planting till winter ironclads are propagated in sufficient numbers to supply planters or go on in the old, old way? Do neither; plant summer and fall ironclads as far as you want and can get them direct from reliable nurseries, home nurseries preferred. Aside from that, let all who can do so, get ironclad or the hardiest winter apple seed procurable. Sow it and grow trees for their own planting, not merely for even winter apple seedlings but for the chance of getting choice sorts. Needing winter ironclads far more than the East, the West must take the lead in getting them up. It is true that from seed of winter ironclads we could not depend on getting all winter or all ironclad seedings. But as like begets like, so would ironclad winter apple seed be most likely of any trees, seeds or grafts in reach, to produce what we most need. Probably half the produce of average ironclad winter apple seed can be depended on to give ironclad winter apple trees. Every ironclad winter apple seedling fruited increases our chances for those very choice selected seedlings we all want for budding and grafting. Let us stop putting the fruit before the tree. Let us strike for the fundamental bedrock of hardihood first and having thus started right we can safely go ahead. This job, however tedious and difficult, has to be done and done right. Every Western man is interested in its speedy accomplishment and so we ask everybody's help. The more go at it the quicker and easier will it be done as it should be. Please note carefully that I do not recommend common apple

which would only make a bad matter worse. P. M. Gideon, of Excelsior, Minn., who raised the ironclad Wealthy apple, first sowed a half bushel of common apple seed from Bangor, Me. All he found in it worth saving was the Wealthy. But this one variety he told me he had been repeatedly assured was worth to the State of Minnesota alone a million of dollars. Comparisons are odious, but, all things considered, for Northwestern planting in that extreme climate, which were better, a hundred fresh-average apple seeds, costing in and with say ten apples, ten cents; or a hundred average tender, first, class, grafted apple trees, costing delivered $15 or $20? I should choose the seeds. The seeds, if I could do no better, I would plant, and from them might possibly get one hardy bearing tree. The tender trees I would not have on the farm even all planted out as a free gift, because I know that the first test winter would kill every one. In going back to the seed let us not repeat the folly of meddling with tender stock. Let us take no avoidable risks in that direction but secure ironclad winter apple seed or the very heardiest in reach.

"But what can we already overworked farmers of the West do with apple seeds and the nursery business?" Do what thousand of Eastern, yea, Western farmers have done before you, raised glorious seedling orchards, got them into full bearing, had plenty of apples for their families and live stock and some for their unbelieving neighbors, kept the best trees for fruit and grafted over the poorest with the best grafted fruit. If you can see money in apple seeds as well as in timber seeds, sorghum, garden and flower seeds, I have no fears but that the apple seeds will take their proper place in your affections and the farm course. In the growing season, if you have a little nursery, you can go that way to and from the barn and lot. Advising careful experiments, I would reject impossibilities, as for instance the effort in a Northwestern climate to grow fruit or tender trees. I ask only your candid consideration of the whole subject. It will do your children, at least, as much good to grow up with young trees, fruits and flowers as with young live stock. It will make them better citizens, physically healthier, mentally stronger. They will love the country and stay on the farm all the better for it. Your live stock will doubtless be healthier, more profitable with daily fruit rations. For both people and live stock, taking the whole country together, I doubt if there is half a proper supply of fruit grown. When those devouring evils, strong drink and tobacco are abolished, then, and not till then, will fruit and fruit-growing take its rightful place in the world. I advise orchard growing from ironclads, and, because in that way only can Northwestern farmers get the best orchards possible in their locations, in the shortest time and for the least money. Top-grafting the trees that bear the harvest apples, it is true, will cost money or time, perhaps considerably more than the first cost of grafted nursery trees for the orchard, on the other hand remember first, that hardy seedling orchard trees make the best stocks to graft on; second, that ironclad winter apple nursery trees are not now to be had; third, that by the time your ronclad seedlings get to bearing choice ironclads, grafted sorts will probably be known and by top-grafting them you can soon have the very best.

"But from the seed it takes so long!" Have we not been planting alien grafts forty years? Would you spend more time and money thereon? Ten years' growing ironclad seedlings will help more than forty years more on the old track. Average seedlings may be one or two years tardier in bearing than the average rootgrafted trees. The ironclad grafts we now have, Tetofsky, Duchess of Oldenburg and most Siberians, are very early bearers. Ironclad seedlings, at least a part will probably bear early, on account of a more dwarf northern habit. From the seed very early bearers would come, say in five years, tardy bearers in eight or ten years. Our early enjoyment of fruits is not the highest consideration. Shall the West have choice ironclad winter apples and shall we grow seedlings as the best way to get such?

On the question of time and Western nurseries, how many smart Western towns would like a live nursery started in their suburbs the coming spring? Do you really want to secure a nursery as soon as possible? Help us remove the great stumbling blocks in the pathway of Western horticulture; (1.) Popular ignorance and indifference; (2.) These unnaturalized, unnaturalizable varieties of fruit. Help us get honest, hardy western ironclads and every one of you can have a first-class local nursery—if you support it as you ought to. Big nurseries and tree peddlers kill or prevent good local nurseries. Why not take pains to patronize a worthy young local nursery just as much as any other needed, local convenience? Every year every western State or county agricultural fair offers premiums on fruit displays. If they would help western horticulture, why not offer every one a liberal premium on a choice ironclad winter seedling apple grown in the State or county? These premiums should require (1.) sufficient time and exposure to full crops and severe test winters to establish their ironclad hardihood and productiveness; (2.) high quality of good keeping winter fruit; (3.) good size and color to com-

pete throughout with best eastern varieties. Put all regular seedling apple premiums on choice winter ironclads. Striving for them, plenty of good ironclad summer and fall will come in, which, if worthy, may receive special premiums.

"How far north may we hopefully plant ironclad appleseed?" I can only answer that I believe we may confidently plant as far north as the native crab apple grows. Careful experiments alone can tell. It might be you could grow trees on your soil when your next neighbor on his soil could not.

Directions for starting seedling orchards in the northwest many northern horticulturists can give better than I. But I will try to speak of (1.) Soil; (2.) Location; (3.) Seed; (4.) Management.

SOIL.—Any good tree, corn or garden soil will do. In severe climates that soil is best which gives the ripest, nearest ironclad growth. Soil too poor, enrich carefully with well-rotted barnyard manure or the like. Trees dearly love ashes, leached or unleached, which are often best applied on the surface. Coarse manure, hay, or straw, leaves, weeds, etc., make good mulch, which, decaying, enriches the soil. Too clayey soil sand-dress, too sandy soil clay-dress. Special manures, salt, lime, land plaster, bone dust, etc., I believe well worth careful trial. Don't burn straw and leaf piles, don't neglect manure heaps and the many other sources of soil enrichment. Teach children that waste is wicked—murder in the first degree.

LOCATION.—For the farm nursery choose a side or corner of the garden well sheltered and protected from winds, live stock, rabbits and mice. And now about locating orchards—in many sections orchards on low ground are more liable to lose fruit, bloom and sets by late spring frosts. To prevent this, we formerly favored and still prefer rather high, dry, gentle slopes for fruit, choosing any slope rather than the southern or southwestern. But since returning to Wisconsin in August, 1879, we have found sound, profitable orchards on relatively low, level land and again on full southern slopes. We have often been surprised at the wonderful adaptability of trees to widely varying locations and soils. Glorious old King Apple Tree seems perfectly democratic, rearing his royal throne wherever a loyal subject dwells. We note some failures chiefly on poor, windy, gravel knolls and wet, soggy ground. Before planting wet soils drain thoroughly. Tile underdrains are best, but surface draining, planting every row on a heavy ridge with a deep dead furrow between in the middle, will help greatly. In planting gravel knolls protect thoroughly from winds and dig out a pit where each tree is to stand and put in a big cart load of strong loam to plant in.

SEED.—If we can't get ironclad winter apple trees at the nurseries, where are we to get ironclad winter apple seed to start with?" First, find ironclad winter apple trees and then arrange to secure the seed. As we want everybody's help in this good work, so do we want seed from every hopeful source. In a multitude of counsellors and varieties there is safety. Let us first look in the northwest, where trees have been most thoroughly tested, in Minnesota, northern Iowa, central and northern Wisconsin, then in Canada and northern or mountainous New England, last but not least, let us look through the apple trees of northern Europe and Asia. Scattered over this vast expanse are doubtless thousands of glorious winter ironclads. But I believe within comparatively easy reach of northwestern horticulturists and farmers there are ironclad trees the seed of which, if known and saved, would be literally worth to the country at large its weight, forty pounds to the bushel, in gold. The chances are that it can be had for, at the very highest, the going price of the fruit. Until the seed of each particular tree or variety is sowed by itself and tested, we must be guided by parent tree indications.

"What kind of seed shall we try to get?" That which combines the most strong points. (1.) Fresh seed. (2.) From well-tested, vigorous, productive, winter, ironclad, grafted or seedling trees. (3.) From trees that hold the fruit well the season through, not dropping it in hard winds or drouth. (4.) Fruit that keeps well through winter. (5.) Of fine flavor. (6.) Of brilliant red or some other fine color. (7.) Of good size. There are some other points to be added as fast as possible: (1.) Annual bearing trees. (2.) Blight proof trees. (3.) Trees that shape themselves, requiring little or no pruning. (4.) With blooms and sets that stand late frosts the best. (5.) Earliest bearing trees or natural dwarfs for small lots. Another point that will take long comparative trial to work out, what sorts possess the highest breeding capacity and will give from seed the best results in tree and fruit? Some leading horticulturists think that at some future time, after long in-and-in breeding our best fruits may be best propagated from seed. For such and many other experiments every State should have a splendid State agricultural and horticultural college—and will have whenever the people demand it.

"How shall we get such choice seed?" Where there's a will there's a way. I believe if one-tenth of the ironclad winter apple seed now wasted in cider domace, in kitchens, in eating fruit out of hand and feeding live stock, were saved and utilized, we should have an ample supply for both nurserymen and farmers. Ordinarily, who thinks of saving fruit seed? How quickly, almost spitefully the precious seed is rejected? Why not careful, discriminative saving and sowing of fruit seeds? The best time to

find the best trees for seed is in the fall, when the trees are in full bearing. Of anything extra choice, take cions also for the grafting and nursery test, also fruit for the celler test. For such work in the hurrying fall season, nurserymen have little or no time. Who then will promptly, adequately explore the vast extent of northern orchards, extending over both hemispheres? In the absence of national and State appropriations, we must rely the more on editors friendly to horticulture, on earnest individual help, on everybody that loves good apples and on everybody interested in the west.

There are those in our country who have acquired wealth in the true business spirit. May we not most respectfully lay this case before them also? Could they not most patriotically devote a few of their multiplied thousands to the exploration of these northern orchard mines? What a blessing to the country at large, what a special boon to the great west, what an honor to the profession would such an investment be! Why not as useful, as worthy as the vast public and private appropriations for Arctic exploration? Why not as worthy of national government attention as the costly and usually whitewashing investigations of public steals and scandals? Millions for the farce of locking the stable door after the horse is stolen—or rather to attract public attention to old steals, the better to cover new ones in progress, but scarcely a cent for the prevention of crime through the encouragement of honest farm and fruit improvement. Things will be different whenever the people wish it!

Reader, you who have lived on the northern limit of apple orchards, think back and see if you have not known of some tough, hardy trees that have stood up, grown and borne apples, while other trees all about them gave up and died. Perhaps in Canada, northern Maine, northern Vermont or New Hampshire, in father's or uncle's, in Deacon or Neighbor So-and-So's orchard, you know several such trees. Some bore early, others fall apples; while one or two bore such small, hard, late winter apples they went to the cider mill, and the seed was thrown out in the pomace. The long-keeping apple seed is the kind we want, remembering that common winter apples from there, prove here, in our longer, hotter falls, only fall or early winter fruit. But by chance, somewhere in the neighborhood, there might have been a hardy seedling that bore smooth, fair, brilliant red long-keeping apples, "real nice tasted," or pretty sour—yet because of its small size the fruit went to the cider mill with the rest. Seed of that will be the gilt-edged seed for us. Possibly you might have known a local ironclad graft or a seedling that bore large, fine, red, long keepers, "just as good as any grafted fruit," and stored in the cellar with the grafts for late winter and spring. Of such a tree we want not only seeds but cions' with specimens of the fruit to test in comparison with our standard grafted apples of the same season. Anybody knowing of a choice ironclad, long-keeping apple should lose no time getting it into good hands for immediate propagation if before good judges it proves or promises to prove, worthy. We must be both prompt and careful. We will take some risks to hasten promising winter ironclad apple tree propagation by grafting and budding, in the meantime urging forward in different States or sections full and final tests and until then recommending varieties as promising only so far as known. In such a crisis the floodgates of ignorance and deception will be opened to a floodtide of new trash, worthless in both tree and fruit. Whoeo will may be swindled thereby and whoso will may go unscathed.

If it seems good to you, as soon as possible after reading this, write back to father or uncle, aunt or cousin, friend or neighbor to please be sure and save you some of those ironclad long keepers the very next crop the trees bear. To write will cost you a three-cent stamp and will do yourself and your friends many times three cents worth of good. Here we beg to digress to say that the neglect of many well-educated people to keep up their writing (reading and thinking) is one of the most discouraging signs of the times. For those who cannot read and write there is an excuse, but for the many who can write but will not, what excuse can be offered? Why not at once, O most noble Americans, put up the broken down wires and henceforth keep up the communications?

Those friends will save you, say half a pint of clean apple seeds, which, in a strong envelope at one cent per ounce postage, will cost you six cents more, making the total cash outlay for, say a thousand good apple seeds to start your farm nursery with, nine cents! A thousand good apple seeds should give you two or three hundred seedlings. If I could get Duchess of Oldenberg, or Siberian crab seed, or any other sort that promised to be ironclad, I should sow it. To get a start this spring, I would, if possible, buy northern grown ironclad winter apples, save and sow the seed just to make a beginning. Of grafted fruit, so far as I know, Golden Russett is the most hardy and common in market, but it is not ironclad.

Apple seed, before doing up to send off, should be carefully dried off to prevent mold and decay. Dry apple seed soak thoroughly two or three days, place in a vermin-proof box in layers with sand, and set on the north side of a building, where it will freeze and keep frozen till spring.

MANAGEMENT.—"But this horrid climate, such extremes of heat and cold!" True, but the climate is of your own seeking, and all I ask, now that you are there on the ground, is whether you will try to

make the best of it. Lying down at the very outset will not make you master even as far as it can be mastered, I don't know and you don't know what can be done in a new country until you try. I believe in our glorious, rugged pioneers. As well as I know in fruit matters, I am offering them the key to the whole situation.

Were I a farmer I would plant fruit seed, take a farm paper, plant a sugar orchard, plenty of timber and sorghum, belong to a farmer's club, learn how and teach my children how to bud and graft, if I knew anything about it; our farmers bitterly need more horticultural knowledge and skill.

Sow apple seed very early, as soon as the ground will do to work in spring. As before remarked, sow on ground well sheltered, thoroughly protected from wind, live stock, rabbits and mice. In light soil fresh seed or new pomace can be sown in the fall, mulching just after ground freezes to keep the ground soft and moist over winter. Early in the spring take off the mulch, cover apple seed in rows or drills an inch deep, pressing the soil pretty firmly over the seed. When the seed is up weed and hoe as with young vegetables, killing worms and insects as fast as they appear. The young seedlings the first fall should be, say a foot high, root grafts rather taller. If the trees stand too thick, thin out to six or eight inches in the row, burying those taken up root and branch, covering roots a foot deep, treading the soil firmly on the root and covering the ground after it freezes with six or eight inches of permanent mulch to keep the roots from weather changes and extremes. Seedlings winter well in moist not wet dirt, in a cool, frost-proof cellar, best in a mice proof box. Early in spring shorten roots to eight inches and plant an inch deeper than they grew in the nursery, rows four feet apart, and six or eight inches apart in the row.

To winter seedlings where they grow just before the ground freezes, haul up eight inches of dirt in the row just after the ground freezes, mulch all over with six inches of manure or something that will keep in place and not harbor mice. Next spring take away mulch and dirt, then weed or hoe up to July 15. After that let the soil harden and w[illegible]ds will help check and ripen off growth perfectly before cold weather. Any late growing t[illegible] pinch and drop off Sept. 15. Before the ground freezes the second fall the trees, now about [illegible]e feet high, should be well ridged up, say twelve inches in the row. To protect roots mulch as [illegible]n the first fall. To protect tops against snow-drifts, severe cold, rabbits and mice, set bundles of straw, hay, flax or cornstalks solid on each side of the row. In nurseries over winter, I have never seen any protection for tree tops or bodies above ridges of dirt plowed against the rows. But in farm nurseries I would prefer greatly to protect every fall and so keep on the safe side. The first three or four winters from seed or graft, trees are most subject to (1.) Killing back in top; (2.) Blackheart in bodies; (3.) Root killing in dry freezing and thawing ground.

Against all three dangers we protect by (1.) Ironclad seedlings or ironclad grafts on ironclad root (2.) Cultivating early in season only, pinching off any late shoots Sept. 25, to secure perfect maturity of growth; (3.) Thorough fall ridging up in row; (4.) Thorough mulching in fall over winter; (5.) Thorough protection of bodies and tops while trees are young with bundles of straw or the like as already mentioned—such protecting straw and dirt to be removed early every spring.

In three or four years from seed trees should be five to seven feet high and fit to transplant into the orchard. Trees got through the first three or four winters perfectly sound are much more certain to remain permanently sound and healthy. Prune if you must in the spring, but an ounce of preventive nipping, pinching, shaping tops just at the right time when shoots are starting is worth a pound of compulsory after pruning. In severe climates I must prefer low heads commencing only a foot or two above ground. In handling trees do not expose the roots to the sun, air or frost. Keep roots always moist and covered well under ground with dirt trod on them.

Until northwestern nurserymen are well supplied with choice grafted winter ironclads why not for orchard planting grow seedlings from best winter ironclad seed? There need be no fear of having too many seedling winter ironclads from which to select future best cultivated varieties. To select out such varieties must take many years of trial.

I repeat, sow ironclad winter apple seed. The poorest farmer or lot-owner or child of such may grow only one seedling that in tree and fruit may excel all competitors.

Sow ironclad pear seed or the hardiest you can get. Next to apple, nothing so needed, so promising in the west as pears from hardy seed.

Sow hardy plum seeds, especially of our most delicious native plums. Large, luscious, beautiful native plums are grown in Northern Dakota along the line of the Northern Pacific railroad. Let us get sprouts and seeds to try in our several localities.

Sow hardy cherry seed, including seeds of the best sorts of the hardy, late, prolific native black cherry. I have seen fruit of this of nearly twice the common size and better in proportion.

Sow hardy grape seed and seed of all other hardy, edible fruits, of flowering shrubs and plants to keep improving our assortment of cultivation.

In the present depressed condition of western horticulture whoever brings into bearing an ironclad fruit seedling is so far a public benefactor.

Mr. Dart firmly believed in the arguments advanced by Mr. Phoenix, particularly that we should grow seedlings from hardy apples.

Mr. Jordan said that though it was a long and tedious plan, it must win, and the coming apple was a seedling from hardy parentage.

Mr. Pearce said it would take generation after generation before we could produce an apple of desirable quality that would be perfectly hardy in Minnesota.

In his trials of seedlings, in order to facilitate the work, he buds from seedlings into bearing trees and is thus able to produce fruit in two years from seed.

Mr. Dart said if we take seeds from all sorts of fruit indiscriminately, that it will be many generations before we arrive at satisfactory results, but if we plant seed from such good hardy fruit as the Duchess and Wealthy, the desired result will be reached much sooner.

If a thousand seedlings grown from seed promiscuously, not ten would be alive in ten years. He had planted a large lot of crab seed and grafted the seedlings, and found only one in twenty sound.

Mr. Harris said that he believed if all would practice the planting of seed from hardy fruit, we would get our apple in time.

The Russian apples were advanced by generations after generations of seedlings from China to Moscow, but it took five hundred years to do it. Soil and climate has much effect on seeds and seedlings, and the tree that would endure sixty degrees below zero at Moscow, might be killed by forty degrees below zero in Minnesota.

Mr. Gibbs said there was no use in groping in the dark, there are authorities on these matters. Certain varieties will transmit their qualities through seed to tree; they have the ear marks of bud and leaf by which they can be distinguished.

He cited to the Iowa report of 1879, article by Prof. Budd, and commended the experiments at the Iowa experimental fruit farm as worthy of careful study.

REVISION OF THE FRUIT LIST.

Mr. Dart moved that the Wealthy be recommended for general cultivation, in favorable localities in the State. Mr. Stevens moved to strike out the word favorable.

Mr. Dart said that the Wealthy was hardy in some localities. He lost one-half of his during the Christmas freeze of 1880, and half the balance were now looking sick.

He cited other localities where it was not doing well, thinks if there is any doubt at all we ought to be very careful about recommending it for general cultivation.

It was first put on the list without sufficient long trial, thinks it a very valuable tree, but on the bleak praries and north of the southern belt of the State he did not believe it was hardy enough.

Mr. Stevens thought much of the complaint about the Wealthy arose from parties getting trees not true to name.

Mr. Fuller said that notwithstanding his report, he must object to Mr. Dart's position. Mr. Sias said we must judge a tree by its fruit. The Wealthy shows its fruit every year. He did not care about the color of the wood if he can get the apples, said the wood was often black, from the effects of insects. Mr. Grimes warmly sustained the Wealthy. Mr. Jordan said the Wealthy stood the weather as well as the Transcendent or Duchess. Mr. Gould thought the State would yet be divided into sections, when fruits of different degrees of hardiness would yet be grown. Mr. Underwood thought his test at Lake City a good one, as the location of his orchard was bleak and sandy, and the Wealthy was doing well with him, thought the soil very trying, grew four hundred bushels of Wealthy last summer. Mr. Harris said he had seen Mr. Underwood's Wealthies on the trees and had estimated the crop at four hundred bushels at the time. Mr. Gibbs said the oldest bearing Wealthies in the Jewell nursery were now eleven years old, top-worked on Transcendent and all sound and thrifty.

Mr. Pearce had 700 Wealthies five years old, all looking hardy. He would discard all apples but the Wealthy.

Mr. Stevens' amendment prevailed and the Wealthy recommended for general cultivation in the State, 19 for, one (Mr. Dart) against. The Haas stricken from the list entirely.

Fruit List as corrected is as follows for 1882:

APPLES.

For general planting, Duchess of Oldenburgh, Wealthy. For planting in limited quantities Tetofski. For planting in limited quantities in southern eastern Minnesota.

Plumbs cider, 4 against, 8 for.
Fameuse, 2 " 10 "
Tetofski, 5 " 7 "
St. Lawrence, unanimous.
Walbridge, "

CRABS AND HYBRIDS.

For general planting, Beecher Sweet, Orange, Early Strawberry, Whitney No. 20, Powers Red and Minnesota.

For planting in limited quantities, Conical, Hesper Blush, Virginia, Hyslop, Hutchinson's Sweet. The latter added to list by a vote of 12 to 1.

The following varieties are named as exempt from blight: Orange, Beecher Sweet, Conical, Whitney No. 20, Minnesota and Early Strawberry.

As liable to blight: Transcendent, and recommended to be planted isolated from other orchard trees.

GRAPES.

For general planting, Concord, Delaware and Janesville. The Janesville especially recommended for its earliness.

For planting in limited quantities, Worden, Rogers No. 15, 19, 3, 4.

For trial, Moore's Early, Lady and Brighton.

RASPBERRIES.—FOR GENERAL PLANTING.

Black Caps. Doolittle, Seneca, Mammoth Cluster.

Reds. Turner, Philadelphia, Purple Cane. For trial, Gregg.

CURRANTS.—FOR GENERAL PLANTING.

Red. Red Dutch, Victoria.

White. White Grape.

Black. Black Naples. For trial, Stewarts Seedling's Red and Sia's Seedling Black.

GOOSEBERRIES.

For general planting, Houghton's American Seedling.

NATIVE PLUMS.

For general planting, Harrison's Peach, Forest Garden, Weaver and DeSoto.

STRAWBERRIES.

For general cultivation, placed on list in order of merit.

1st. Wilsons Albany Seedling, Hermaphrodite.
2d. Charles Downing, "
3d. Downers Prolific, "
4th. Green Prolific, Pistillate.
5th. Crescent Seedling, Pistillate.
6th. Capt. Jack, Hemaphrodite.

For general trial, Cumberland Triumph, Miners Prolific, Red Jacket and Pioneer.

For trial by Amatuers, Bidwell and Iowa Prolific.

BLACKBERRIES.

Stone's Hardy recommended for trial.

WEDNESDAY AFTERNOON, JANUARY 17.

Paper by Col. Stevens, (not furnished the Secretary.)

Upon motion of Col. Stevens, Chas. Hoag was elected an honorary life member of the society.

FOREST TREE CULTURE.

ADDRESS BY S. M. EMERY.

The consideration of the above vital question is of the greatest importance to us as horticulturists. Upon it depends largely the successful opening up and maintaining of homes on the vast prairies extending from the Mississippi to the base of the Rockies.

This vast region is treeless, excepting an occasional belt skirting the water courses that intercept the country.

We can obtain no definite idea of the immensity of this country by scanning the map and saying it is a tract so many hundred miles long and broad. Infinity is almost as well comprehended, or the earth's distance from the sun.

To approximate a correct idea one must see for themselves. Go into the Red river valley, if you please, where from the extreme levelness, (if the expression be allowable), the impression forces itself upon you that you are in the center of a vast depressed circle, the circumference of which arises to the horizon miles away and stretches out on all sides, a vast inclined plane up which you must ascend to reach the apparent level beyond.

These lands, as a rule, are fertile and highly desirable, with the exception of an occasional stony tract or sand hill, rendering the soil unfit for wheat culture but offering much needed building material.

This is literally a Garden of Eden, with naught to do but to enter in and take possession, and to give you an idea of the countless host which is entering in and taking up the land, I will, by the courtesy of the United States land officials at the following offices, give the figures of timber culture entries, first reciting the total number to present date, since the opening of the offices, and second the entries for the year 1881:

	Up to Date.	Entries, 1881.
Watertown, Dakota	5,044	1,149
Mitchell, D. T	7,274	1,369
Fargo, Dakota		1,329
Redwood Falls, Minn	1,266	70
Total	13,684	3,909

These you will observe are the land offices that we as members of the State Horticultural Society of Minnesota, may class as our neighbors, and to these seventeen

thousand and odd timber culture filers we will presume to address these observations.

During certain seasons of the year travelers in the Alps are careful, when traversing dangerous parts of their journey, to abstain from calling in a loud tone of voice, lest the vibrations of the air, set in motion by their voice, should detach masses of the yielding, melting snow, which in its descent should assume such dangerous proportions as to form avalanches, greatly imperiling life and property.

The writer apprehends no such immediate effects from the uplifting of his voice in this matter, nor does he expect to diffuse so much information in handling the topic, that the question will be easily solved by following suggestions thus thrown out; but he does expect the older and more experienced members of this society to embrace the opportunity for remarks and discussion, after this reading, that will in a great measure, help our frontier settlers to bury as with an avalanche, the troubles and difficulties experienced in making anything of the nature of a tree, to thrive on the prairie.

If this end be accomplished, great indeed will be our reward.

Returning to our subject, these settlers find to their hands, broad acres of virgin soil, *inviting* the ministry of man and machinery.

The lands, to commence with, are in better condition than the no less fertile timbered lands of Wisconsin, Michigan, Ohio and Indiana, after three generations have patiently dug, blasted and grubbed their way to the hidden mysteries under the surface.

The first question suggesting itself in the premises is, What is the one thing needful to make happy, prosperous homes of these beautiful lands? What is the great desideratum to success, comfort and happiness? We unhesitatingly answer, Timber —for fuel, buildings, fences, railroad purposes and a hundred equally needful requirements. In a word, timber means homes, society, communities; the lack of it discomfort and desolation. To say these broad level plains are embryo wheat fields is literally true, would an exclusive disposition to this end be wise? As Minnesotians, we are wont to felicitate ourselves on being an agricultural people, and commiserate the mining regions, who get their gold and silver ready made.

Look at the mining sections of California. The beautiful hillsides scarred and gashed with ditches, tunnels, and excavations; its clear, free running streams filled with mud—changing the crystal snow-water to turbid masses of impurity, and the fair face of God's creation used for dump piles. A home with such surroundings would truly be in the midst of unqualified desolation; and yet, we ought to inquire if our course, in exclusive wheat-growing, is a wiser one.

The older sections of our State are crying out for freedom from a merciless tyrant whom we created in crowning wheat for king.

Dame Nature is long suffering and kind, but when we demand "bricks without straw" it's too much, even with her boundless resources, and any system of farming that looks to the planting of one fixed certain crop, year after year is exhaustive to the soil, expensive to the farmer and injurious to the body politic.

To say that our bonanza farms are bonanzas to any except the owner is a mooted question.

Suppose the case of the money-making Eastern merchant, who, worn out with business, care and worry, comes west for recuperation. His active, speculative mind sees rare chances offered for the taking. He buys a few thousand acres of land;

sends east for men, mules and machinery by the car-load, and provisions for them come from the same source; the lands are speedily put under cultivation; a half dozen crops of wheat are skinned off; he owns his own elevator on the line of the railroad, ships his grain to the east, sells it, and adds the proceeds to the fat bank account in New York city. If any of this cash ever gets into circulation out west, where it rightfully belongs, it will be at the expense of a mortgage lien, upon the farm of some poor homesteader, which our New York friend will need bye-and-bye to square out his railroad sections, when the mortgage takes the land, which it will surely do if he bases his expectations upon exclusive wheat culture in a small way.

Machinery, taxes, interest, are certain actors, uniformly good crops of hard No. 1 are uncertain factors, the whole going to make up the problem of wheat growing for a living.

The evident intention of these speculators is to make money both in buying and selling their lands, and after the novelty wears away and the cream fairly skimmed off, they will peddle them out by the quart (er) and "better late than never," for the country. Then, what are these wheat farms worth, how can they be utilized? How make amends for previous abuse?

True they can be seeded down, but what will you do with the product. Handling hay for profit on a large scale is a delicate task, and stock to which the hay can be fed becomes a necessity. Stock growing presupposes shelter from cold and heat, and fences for pastures, and it is then late in the day to commence a new deal, and to make all this from seeds, seedlings and cuttings.

The law of congress regarding the growth and culture of timber, is too well known to need mention in detail at this time, suffice it to say that in the extreme liberality displayed in this measure, rare foresight was shown in the endeavor to provide this great and crying necessity, and the disadvantages are invariably owing to the machinations of land sharks, who are always ready to snap up the unwary. The most serious defect in the law, is allowing an entry under the timber culture act to be relinquished, and either a homestead or pre-emption to be placed upon the same. This will probably be changed by this present congress. We need all the timber claims that have been made, and we must have them improved. Estimating that each settler on government land takes his full quota—three quarter sections, as is the usual custom,—this will only provide one-sixty-fourth of the entire land to be planted to timber. And now, how can the most be made of this limited area?

Too many men only see in this law the means of procuring 160 additional acres of land, and if they comply with the law and carry out its demands, it will be as if they are saved by grace alone.

The provisions of the law, in substance, is to the effect that the first year the land must be broken, the second year cropped and the third year planted, in two installments of five acres each, a year apart, ten acres in all, with an acre thrown in for good measure, and to provide a firebreak around the young grove.

The best time to break is from May 15 to June 15, depending upon the condition of the grass, which should be in its prime as to rankness, tenderness and juiciness, it being desirable that it should rot speedily when turned under to the depth of two inches. After doing this allow the breaking to rest until the middle of August, by which time, in some localities, the noxious plant seeds in the soil will have grown and can be turned under by back setting, *i. e.* turning the sod bottom side up, with

two inches of fresh soil thrown over all,—this presupposes a breaking depth of two inches and a back-setting depth of four inches. Ground thus treated, on examination the following spring, will be found to be as loose and friable as an ash heap, and in fine condition for the crop as provided for by the statute.

At this time many make a fatal mistake in planting a crop that will allow a thorough seeding of weeds. Beyond question the best crop to keep the soil free from weeds is flax. By carefully harrowing the soil, and planting in good condition, flax will yield from fifteen to twenty bushels to the acre, and, as a rule, will average eighteen bushels, and at the usual price ought to reimburse one for every penny expended up to this time.

As soon as the crop is harvested plow shallow, expecting before it freezes to plow again, deeper than ever before, say six inches; after thorough harrowing the timber claim will then be in fit condition for any kind of stock, be it trees, seeds or cuttings. At the end of the second year, and all things being considered, if it is possible to reach it before it freezes up, one should by all means plant the claim at this time; why make two bites of a cherry? You have then anticipated the law by two years, and put yourself beyond the pale of a jumper, who is always ready to take advantage of any man, who through ignoran e or inability, fails to comply with the law. To make the claim in finer condition, I would recommend the pulverizing of any claim jumper who may show himself in your vicinity, bone dust being highly valuable as a fertilizer, and beside improving your own farm, you are doing your neighbor a kindness in removing a detestable evil, peculiar to the frontier.

From the large quantity of entries under this law, it is safe to say, that it will be necessary to use the three methods provided, *i. e.*, trees, seeds and cuttings, with the ground in proper condition and a growing spring, each will do well, if properly planted. The rooted seedlings, however, will stand more abuse of planter and season than the cutting or seed. The cutting will make larger growth, if a favorable season, than either the tree or seed, providing they are the same when planted. There are two things to avoid in planting cuttings or seeds: (1.) Sticking the cutting by hand into the mellow soil. (2) Covering the seed with too much earth.

Plant a cutting with a spade, dibble or plow, if the two former, set full depth and *firmly*. If, with the plow, open a furrow, set the cutting slanting in the furrow, and throw the earth back, filling the furrow, and pressing down perfectly the loose soil on the cutting. In planting seed, it is a safe rule to cover with earth the depth of the greatest diameter of the seed or kernel to be planted, unless it be walnut or hickory nuts, which demand deep planting, to obtain moisture sufficient to aid the germ to force its way out of the shell. By this I mean if an apple seed be one-fourth of an inch at its greatest size that it would be safe to cover it a quarter of an inch, a maple seed one-third of an inch should have one-third of an inch of soil over it.

In preparing to plant, it would be advisable to mark in rows eight feet apart north and south, planting two feet apart in these rows, and thus affording an opportunity to plant some kind of a hoed crop in the ground destined for the young plantation, thus insuring careful cultivation for the trees, and allowing a profit over and above the expense of cultivating each crop.

And now that we are ready to plant, what shall be the selection? Beyond doub

the cottonwood is the hardiest, easiest grown of all the forest trees, and the least desirable after being grown. Its long, far-reaching roots make it a perfect octopus, sucking the life and moisture from soil, crops and other trees. Up to the period that it becomes six to ten inches in diameter it is easy to handle, after that time it is of no earthly use as timber to any one, from the comparative impossibllity to work it up. It is soft, spungy wood, allowing the axe to penetrate to the eye, and the locky structure of the fibre preventing it from splitting. After being split it makes a fuel a little better than hay or sunflower stalks, being of a quick flashy nature while burning. Laying aside the feasibility for fuel or timber purposes it makes a quick, rampant growth for windbreaks or boundary line, a question of no minor importance in a country subject to blizzards.

The surest way to propagate this, is by planting the seedings from twelve inches to three feet in height.

Next to the cottonwood, as a general favorite, comes the white willow, grown from cuttings. It is by all odds the better investment of the two. Its rapidity of growth, and the ease with which it is worked up, commends it in every spot that the cottonwood could be placed; planted in a hedge, it soon makes a stock tight fence, from which annually liberal amounts of fuel may be cut.

The box elder grows from seeds and seedlings, and in favorable years from cuttings attaining large size with great rapidity, its sap ranking nearly up to the sugar maple in the manufacture of sugar, and as it occupies the half-way ground, between soft and hard woods, it is of more real value to the planter than the soft woods, such as soft maple, willow and cottonwood.

The white or green ash is grown from seeds or seedlings. There are seasons when cuttings will grow, but the latter method is not reliable, and will only succeed under the most favorable circumstances.

The wood of the ash is in demand in the manufacture of wagons, sleighs, and other implements requiring tough, springy timber easy to work. It should be planted in great numbers, as it offers some returns on the investment.

These four mentioned form, perhaps, 90 per cent. of the forest trees that are being planted on timber claims, owing to the ease with which they are obtained and rapidity of growth.

The government accepts any tree that attains size and is desirable, such as the four already enumerated, and also the poplar, elm, hard maple, linden, black and white walnut, birch, oaks, larch, evergreens that are trees by nature and practice and not shrubs, affording the plauter a wide range, with use and beauty as his guides in his selection.

Our idea of a timber claim would be to select a plat of twenty acres in the most favorable locality for timber growing, and prepare the plant as before advised in rows eight feet apart, forming a piece 40x80 rods in extent, its greatest length east and west. In this plat set alternate rows, two feet apart, in the following order: White pine, European larch, balsam fir, white elm, Norway spruce, box elder, white spruce, black walnut, red cedar, white walnut, Scotch pine, white ash.

The twenty acres would then be divided into a plat, eighty rods east and west forty rods deep; this would subdivide into about eighty rows north and south, forty rods long, eight feet apart, and trees two feet apart in the row would contain 54,000 trees, the constitutional number. Thorough cultivation in eight years or

less would give one of the grandest sites in the Northwest for a home, with ample ground for barn-yards at a reasonable distance from the dwellings, and all alike protected from the summer's sun, or the winter's wind.

Can we estimate the value of such a tract? Is the man or woman living, who, possessing a claim so highly improved, would ever place a mortgage upon it?

And now that the trees are planted, what shall we do for further care of them? For the first season, the low growing crops are the better, such as potatoes, beans, or a low growing species of corn, that will not too thoroughly occupy the soil and rob the weaklings of the warm rays of the sun. In case it is found that the trees, seeds or cuttings have not come regularly, it will be easy in the month of June to procure fresh seeds of soft maple and plant, thus filling out the vacancies at comparatively small expense. With good cultivation they will attain a height of twelve inches the first summer.

We cannot expect to grow a crop in the young plantation after the third year, as the trees should then stand as high as a man, and the leaves will occupy the space thoroughly. They can then be trimmed and pruned to good advantage. With judicious thinning, by the eighth year, the trees will stand eight feet apart and 625 to the acre. Their slender, shapely trunks, growing heavenward, will be a better monument to industry and perseverance than all the worn-out wheat fields in the Northwest.

There may be a difference of opinion as to the best means to attain this end; but there can be no controversy as to the truth that timber is what we need and must have before our fertile valleys are the haven of rest they should be.

And now a word to those on our prairies who have not timber claims. Why not surround four farms with a living fence? Set in three rows, four feet apart in the row, breaking joints, how it would shorten the road to town, whether in bleak midwinter, or whether the intensity of the summer's heat fairly scorches the brain. Think of the benefit such a belt would afford to the railroad that may pass through your farm. The suffering and discomfort that would be aleviated when the snow blockades are abroad in the land, with such a windbreak under good culture, I am almost prepared to offer in the name of the railroad companies, free passes to the men who plant and maintain such a windbreak, through a quarter section of land.

Should you desire to sell your farm, it will be a living advertisemeut, speaking in eloquent language of our energy and thrift, and the good quality of our soil.

There are new departures in timber planting worthy of our consideration, prominent among which are the hardy catalpa and the Russian mulberry. The former you will remember as a native of the shores of Minnetonka, contemporaneous with Col. Stevens and Father Hennepin. The mulberry, an importation from Russia by the Mennonities, where it flourishes in a latitude of 49 degrees. Its consequent hardness and the wonderful rapidity of growth, together with the fact of its being the natural food of the silkworm, makes it by no means an unworthy applicant for public favor.

With the ideal timber claim under successful cultivation, and the mulberry, a valuable addition to the former list, furnishing the means of luxury in the way of silk, our friends of the amber cane society showing us how to make our own sweet, we will then change the old figure of speech, when each man "sat under his own vine and fig tree," to a new version, when, "clad in silk garments, we recline un-

der the wide spreading boughs of an old orchard tree, sipping syrup made from the amber cane," we will be fit subjects of envy by the gods.

We cannot bring this article to an end without paying some slight tribute to the noble men who have so long and dilligently labored to convince the destructive people of America that we must do somethlng to make amends for the devastated forests, and that the only way to do this is by replanting, Prominent among them is Dr. John A. Warder, who, first, last and all the time, has been an earnest advocate of forest trees, and in season, and out of season has had the one end in view, to add to our forests.

One of the most successful arboriculturists in the Northwest is Judge E. C. Whiting, of Monona county, Iowa. He has confuted once and for all the fallacy that forest trees cannot be grown on the prairie, and to-day has living witnesses by the thousands in shapely, stately forest trees on his farm in the Missouri valley.

Nor would we forget our own earnest worker, Mr. L. B. Hodges, who has done more for forestry and forest tree planting than any ten men in the state, and to-day is earnest and active in this commendable pursuit. Honor to them and their work. Proud may we be to occupy an humble position in their ranks, striving for this noble cause, and may our honest endeavors to ameliorate the condition of our frontier sufferers prove our worthiness to stand with them, laboring from the common end.

Mr. Dart presented the following resolution which was adopted:

Resolved, That in all competitive exhibitions we recognize and admit exhibitors from Wisconsin and Dakota, belonging to the same fruit belt as Minnesota.

THE SECRETARY'S REPORT.

Our horticultural year, closing with the beginning of this meeting, has not been an extraordinary one, either of failure or success.

No disheartening calamity of cold or of untempered wind or summer heat, has swept the product of our horticultural labors entirely from the credit side of nature's ledger of fruits and flowers. While all intelligent and painstaking labor has not been met with its meed of success, this should not discourage, for the same fact is recorded of all climates, and that a majority of our workers have been repaid for their labors here in Minnesota is a lasting memorial, bearing evidence of the skill of our cultivators and the value of our Horticultural Society. Its teachings have not been for ourselves alone; but through the beneficence of the legislators of our State we have been able to send our published reports to the "poor but honest" lover of horticulture everywhere upon application. The demand for our reports is so rapidly increasing that your secretary must ask for positive instructions as to their distribution, outside of the provisions of the law.

I have letters in my portfolio from prominent horticulturists bearing tribute to the great value of our work, as being absolute authority relating to the hardiness of trees and plants. This fact makes our volumes of peculiar interest to the nurseryman who grows for the northern trade, and also to those who are following westward the star of empire, and wish for knowledge relating to the horticultural possibilities of the North Star State.

To this latter class I have endeavored always courteously to respond, believing that in doing so I was not only benefitting our State, but ourselves as well, for "we are the State."

Fortunately, before the burning of the capitol last winter, I had secured a large number of our reports, in addition to those already on hand, and with the exception of 1879, we now have several hundred copies of each issue. These will all be wanted in time, as each convert to horticulture joining our society is anxious, and justly entitled to complete his files of our reports. Add to this the demand from kindred societies and public libraries shows the wisdom of giving carefully in our liberality.

With the consent and advice of our president I had constructed a number of strong cases, to contain all our volumes and they are now all arranged and assorted, each case being marked with number and date of contents. So far I have been able to furnish a room for the storage of these boxes without cost to the society, but I am unable longer to do so, and would suggest that some immediate steps be taken to secure a suitable room, that would be at once convenient of access and secure from fire.

It is reasonable to suppose that upon the completion of our State capitol building we will be able to secure a room in that for this purpose, and also for the purposes of our meeting, if so desired, and the plan for storage need only be considered temporary.

With its customary liberality in forwarding projects of public weal, our last regular session of the legislature granted us an annual appropriation of $1,000 to aid us in our work, and also increased the number of our reports to be printed by the State, and also allowed us an increased number of pages.

The same act provides for the distribution of almost one-half of them. As there was no room for the current year's publication in the State document room, at the request of the secretary of State I took charge of the entire 5,000 copies and made the distribution as required by law, so far as I thought best, without consulting the society. I have delivered to the chief of the immigration bureau 500 copies, and sent fifty copies to each county agricultural society and local horticultural society in the State and the State Agricultural society.

The law further provides that each periodical published in the State and each member of the legislature shall have a copy, but as no authority is vested in me to pay postage on so large a number of copies, I have left this for your consideration.

As bound volumes are so much more desirable for preservation, I took the responsibility of ordering 500 copies in cloth, samples of which are being distributed to members of the meeting.

There has been one meeting of the executive committee, one of committee on premium lists, and a fall meeting of the society at Lake City, of which all have had due notice, and full reports are hereby submitted, consisting of premiums awarded, with names of exhibitors, etc., the discussions and addresses at the Lake City meeting, which will be an important factor in next report.

The last report was in the hands of the printers early in the spring and was the first State horticultural report ready for distribution. This is due much to the promptitude of the State printer, J. K. Moore of St. Peter; and the work is creditably done. Errors have crept into it that would not be there if the work had been done in St. Paul or Minneapolis, as the distance compelled proof sending by mail, which prevented the careful revision necessary to insure correctness. While these reports are good for all time, the current year's publication seems to be demanded

early, and all reasonable means should be used to place it in the hands of the people as early as possible.

SECRETARY'S FINANCIAL STATEMENT.

Receipts since last annual meeting:

Membership fees	$ 10 00
From State Treasury	131 00
Farmer's special, Lake City	9 00
	$150 00

Disbursements as per schedule, audited by committee, $166.21, leaving a balance due the society of $16.21.

The report of the committee on the president's address, was then submitted and adopted, as follows:

Mr. President, and Members of the Horticultural Society:

Your committee would make the following suggestions:

First. The appointment of a committee of (3) three to confer with the Horticultural Societies of Iowa and Wisconsin, looking toward the appointment of a similar committee from the societies of these states. The joint committee of (9) nine, to compile a hand book of instruction, for the use of Horticulturists, said book to be a brief synopsis of desirable varieties, how to plant them and subsequent cultivation, said book not to exceed 150 pages, nor to cost each society a larger sum than ($100.00) one hundred dollars, and to be endorsed by each society before publication.

Second. That the executive committee be instructed to appropriate the sum of ($200.00) two hundred dollars, be set aside annually from the annual appropriation of $1,000.00, and invested in interest bearing bonds, interest and principal to be devoted to a premium list, with the object in view of increasing our list of hardy winter varieties of apples, under such restrictions, as shall be deemed best by the society.

Third. That the regents of the State Univeristy be requested to institute an experimental fruit farm, on the part of the new University farm, under scientific management.

Fourth. That a seedling fruit committee of three (3) be elected by the society, and that such committee shall testify their willingness to serve on such committee, their reasonable necessary expenses being paid by the society for visiting desirable seedling trees in our own State. The expenses of such committee not to exceed $100.00.

Fifth. That our society acknowledge their just and honorable indebtedness to Messrs. R. J. Mendenhall and Wyman Elliot, and that the proceeds from memberships be deposited to the order of our Treasurer, on interest; that certificates be issued Messrs. Mendenhall and Elliot in the sum of $100.00 each, to be paid as such sums accrue, to reimburse them for condensing, compiling and publishing our report from 1866 to 1873.

Sixth. That the executive committee be authorized to appropriate the sum of $200.00 annually, (the first payment to be made at the present time) to be paid to our Secretary, for labor in our behalf, also, that the Secretary be authorized to procure at the expense of our society, suitable and necessary cuts, to be used in illustrating our reports.

Seventh. That our Secretary be authorized to offer the Secretaries of the Iowa and Wisconsin State societies, to exchange a number of reports, equal to our membership, with a view to furnishing each of our members with a copy of their reports.

Eighth. That this society elect a delegate to the winter meeting of the Wisconsin Horticultural Society, 1882, and to the Iowa Society 1883, and pay reasonable expenses incurred by such delegate; the object of this, to secure a report of such meetings for publication in our reports.

The following resolution, No. 9, was laid on the table:

That the executive committee be authorized to appropriate three hundred dollars annually, to be expended in equal amounts at the annual summer and winter meetings in payment of premiums on fruit, flowers and vegetables.

The committee in closing their report, compliment President Harris on his useful and instructive address.

S. M. EMERY,
J. H. STEVENS,
F. G. GOULD,
Committee.

The following officers were elected for the ensuing year:

President, JOHN S. HARRIS, La Crescent.

Vice-President, 1st District, A. W. SIAS, Rochester.

" " 2d " S. M. EMERY, Lake City.

" " 3d " G. W. FULLER, Litchfield.

Secretary, U. S. HOLLISTER, St Paul.

Treasurer, J. T. GRIMES, Minneapolis.

E. H. S. Dart was elected delegate to the Iowa meeting, session of 1883.

The chair was instructed to appoint delegates to the annual meeting of the State Agricultural Society.

Upon motion, it was decided to hold the next annual meeting at Minneapolis, begining the third Thursday in January, at 9 A. M., and continue four days.

Mr. Gibbs presented the following resolution, which was adopted:

Resolved, that one or more summer meetings for the exhibition of small fruit and flowers be held at such time and place as the ex-committee may deem best, and that the sum of fifty dollars be appropriated for premiums at such meetings, provided the locality where such meetings are held shall contribute for premiums an amount equal to one-half the amount offered by this society, and that the subject of fall or winter meetings be left to the executive committee, to act at their discretion.

COMMERCIAL ORCHARDING.

BY E. B. JORDAN, ROCHESTER, MINN.

The first steps toward commercial orcharding are the planting and growing of an orchard and the selection of such varieties as will produce a profitable return of fruit in market.

In this severe climate where the temperature, once in five or six winters, goes down to 40 or 45 degrees below zero, next in importance to the selection of varieties, is the selection of a suitable location.

All else being equal, a location surrounded on the north and west by water is the best. Yet, I find in our state, where the blight is so prevalent, that the chances are that you may not gain much, as the annual loss is very great, where the atmosphere is heavily charged with moisture.

So a timber protection would be desirable were it not that without free circulation of air your trees suffer much from blight. We find that high or elevated land sloping to the north or east with south protection, is best. Mr. Gideon once said to me, "that one acre of north slope was worth ten acres of south slope for an orchard," and I believe he was not far from right.

As I have already suggested, the most important thing when you have selected a desirable location, and thoroughly subsoiled the same and prepared it for planting, is the selection of the varieties. After fourteen years of experience and orcharding in Minnesota, and the planting of over 200 varieties of the standard apples, and now having over 100 acres in orchard, my selection of varieties for a commercial or a domestic orchard would be very small. You can count them on less than the fingers of one hand. The varieties that I shall recommend as having been of profit to me are, Tetofsky, Duchess of Oldenburg, and Wealthy.

I have given them in their order of ripening, (the apples,) but in points of value the first should be last. Yet my Tetofsky apples the past summer brought me $2 a bushel, while two weeks later the Duchess were selling in the same market at fifty cents a bushel, and my Wealthy sold at from $1 to $1.25 a bushel. Yet the profit on Duchess at fifty cents was greater than on Tetofsky at $2. I am looking for better returns from my Tetofsky trees, they having well withstood the severity of the last two winters. Minnesota's favorite variety of apple, the Wealthy, has gone clear to the front in Vermont horticulture. Dr. Hoskins, of Newport, in the northern part of the state, pronounces it "the king of all hardy apples," keeping until March and outselling the Baldwin or any other variety brought into that market. In the shipping of fruit I have had but little experience, as our city, Rochester, has furnished market for all my apples except the last season. I did not expect at so early a day to be obliged to ship fruit, but our market was so flooded with early apples that I had to look to other markets for the consumption of my Duchess apples. Not having made preparation, I had to ship most of my apples to be sold on commission In most cases they netted $1 per bushel. The points shipped to were St. Paul, Minneapolis, St. Peter, Sleepy Eye, Tracy, Marshall, Redwood Falls, St. James, Windom, Worthington, Wells, Jackson, and in Dakota, Watertown, Aurora, Brookings and Huron.

Of the three varieties named I have in my orchard: Tetofsky, about 2,000; Duchess of Oldenburg, 3,000; Wealthy, 7,000 to 8,000, and I am now preparing to plant 1,000 more this spring.

Of grapes I had a beautiful crop of Concords. My Eumelian not being covered early, all killed to the ground. Janesville were planted on low ground and mildewed badly.

Of plums I had a fine crop but none of much value for market except the Miner. They sold readily at $1.60 per bushel.

We very much need a long-keeping winter apple with all the qualities of the Wealthy. Who shall furnish this apple?

Mr. Gould asked Mr. Jordan how many apples he had shipped. He answered about four hundred bushels. He had seven hundred bushels altogether.

For every hundred trees planted he would plant ten Tetofsky, thought they would become profitable as they got older.

Mr. Jordan was anxious to ventilate the subject of blight. He believed it an animalcular growth, and that a remedy was found in sulphur. He gave the following, which he said saved his trees. One part sulphur and four parts unslacked lime. He prepared it by slacking the lime, and when at its greatest heat, in slacking, he adds the sulphur. With this, he whitewashes his trees thoroughly. If the blight gets started before this application, he uses air-slacked lime and sulphur, dusting the trees with it. He believes that if you cannot prevent blight from appearing, that he can kill it, when once there.

Mr. Fuller had used the same preparation sufficiently to destroy currant worm, and to prevent blight.

Mr. Sias stated that from personal knowledge, Mr. Jordan's orchard was nearly free from blight, and thought his method a success.

Mr. Jordan stated that he thought timber protection that kept out a free circulation of air, contributed to blight and mildew.

Mr. Bassett said that in his travels, orchards that were most sheltered showed the most blight.

Mr. Jordan said there are varieties of apples that never blight unless planted near blighting trees. He said he could grow Wealthy or Transcendent without blight. The secret is to keep back all sap-sprouts or wood of the Transcendent, and allow a portion to grow. He now has it blight in his orchard. But agrees with Mr. Pearce, that it is epidemic, and that he may get it yet.

The subject of the Russian mulberry was brought up, but no one seemed to possess much information regarding it. Col. Stevens and Mr. Gould each had fifty, and would report at next meeting.

QUESTIONS OF QUERIES.

What tree or trees would you plant in the Red River Valley fifty miles northwest of Fargo, soil from two to four feet deep, clay, with little or no sand, the country flat, also what apple trees would you recommend?

Mr. Emery would plant white willow, larch and poplar. Thinks the

list as presented in his paper about right. He thinks our Minnesota list of apples will do well there if well cared for.

Mr. Fuller said he would send the Transcendent crab there. Mr. Aebrnęthy had seen the Transcendent doing well at Winnipeg.

Discussion of question, what eyes of the potato produce the earliest and best yields of potatoes. Not answered, except that Mr. Harris stated that the strongest eyes gave the earliest crop.

Regarding potatoes in general, Mr. Harris said he thought the Beauty of Hebron was holding its own. The White Elephant he regarded as hardly up to expectation, but explained that his were planted late.

Mr. Sias recommended the Beauty of Hebron first, and Early Ohio second, for early, and the Burbank seedling for late.

Mr. Gibbs exhibited the Belle, and spoke highly of it, though he would like to give it further trial. He said the Jordan Prolific gave the largest crop of any potato he had grown, and the quality was excellent.

Mr. Grimes thought the Early Vermont a better cropper than the Beauty of Hebron.

Discussion of question, which is the best time to gather apples to have them keep?

Mr. Harris would gather them just before ripening fully.

Truman M. Smith said grapes should be gathered just when fully ripe.

WEDNESDAY EVENING, JANUARY 18.

The following bills were presented and ordered paid:

Heating room during present session	$ 6 00
Gas fixtures	2 50
Gas	2 50
J. S. Harris, expenses	11 00

The committee of awards on fruit, made the following report:

Mr. President:

Your committee on fruits on exhibition find a very creditable display of apples, contributed mostly by members from the southern half of the State. We also find that our people are becoming better acquainted with the science of pomology, as the present exhibit compared with that of former years fully demonstrates.

The contributions are as follows:

Collins Pratt, Milville, Wabashaw Co	3 plates
Underwood & Emery, Lake City	18 "
Baker Harrison, Lake City	1 "
Oliver Gibbs Jr, "	3 "

Hazlett S, "	1 plate
Peffer George P., Pawaukee, Wis	4 "
Michenor D. K., Etna, Filmore Co	1 "
Forster Wm., Chatfield, "	1 "
Hartman Mrs. Geo., Hokah, "	1 "
Elliot Wyman, Minneapolis	2 "
" also a large display of Wealthy.	
Heggie D. G., Lake City	3 "
	"
Total number of plates	38

Of varieties we find the following: Walbridge, Utter's Red, Haas, Golden Russett, Talman Sweet, Plumbs Cider, Perry Russett, Minnesota, Quaker Beauty, Hutchinson's Sweet, Seedling No. 8, Melinda, Wealthy, Fall Orange, Allen Russett, Gibbs' Crab, Peffer's Seedling No. 1, Grimes' Golden, Gen. Grant, Pewaukee, Maiden Blush, Long Keeper, Hyslop, Soulard, Lady Crab, Jewel's Red Winter, and also seven plates of seedlings unnamed, comprising in all thirty-two varieties of apples and one plate of grapes, (the Iowa).

This is certainly a large collection of varieties, but it must be borne in mind that many of them are not sufficiently hardy for our climate unless planted in favorable localities.

Your committee, after careful examination, submit the following awards of premiums:

Best display of apples, Wyman Elliot	1st premium
Best plate of Wealthy, Collins Pratt	1st "
" " Underwood & Emery	2d "
" Utter's Red, O. Gibbs	1st "
" " Underwood & Emery	2d "
" Haas, Uuderwood & Emery	1st "
" Walbridge, Underwood & Emery	1st "
" Seedling not before exhibited, Geo. P. Peffer	1st "
" " " " Wm Forster	2d "
" variety not named, O. Gibbs	1st "
" " " Geo. P. Peffer	2d "
" Minnesota Crab, Underwood & Emery	1st "
" Hybrid not named " "	1st "
" " (desert) " "	1st "
" " " O. Gibbs	2d "
" long keeping Hybrid, Underwood & Emery	1st "
For the best plate of long keeping grapes, Wyman Elliot	1st "

All of which is respectfull submitted.

J. T. GRIMES,
M. PEARCE,
F. G. GOULD.

In answer to a question as to the best time to prune trees, Mr. Underwood advocated pruning in June.

Mr. Pearce agreed with Mr. Underwood. Mr. Pearce would not prune, but would pinch back young shoots.

Mr. Harris thought we might prune in the fall with perfect safety.

Upon motion of the Secretary, a vote of thanks was tendered Mr. Gale, for use of chairs, furnished by him.

The Committee on final resolutions, made the following report:

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Mr. Chairman and Members of the State Horticultural Society:

Your committee have a pleasant task to perform, in returning their sincere thanks to the citizens of Minneapolis for their generous treatment of our delegates. We are under renewed obligations for this duty so pleasantly and hospitably rendered.

We can only offer, in token of our sincere appreciation, a hearty invitation to those citizens to lend their presence to our summer meetings, and allow us an opportunity to reciprocate in some slight degree their many favors, to us as a society.

We would further remember in grateful appreciation, the Chicago, Milwaukee & St. Paul, the Chicago & Northwestern and the Chicago, Minneapolis & Omaha lines of railroad, for substantial favors tendered, in furnishing transportation to our members, to and from this convention, at one and one-fifth the regular rate.

Also the chamber of commerce, for the use of their pleasant room, for our sessions.

Especial thanks are due to Messrs. Pearce, Stevens, Elliot, Chute and Mendenhall, for their self-imposed duties of providing room entertainment for our members during the meetings, and to the daily papers, for their generous reports of our sessions. Also to H. A. Gale, for his kindness in furnishing chairs to seat the hall.

In conclusion, we compliment individually and colletively, the members of the society, for the good attendance and interest that have prevailed.

We certainly, as lovers of Horticulture, can feel encouraged at the present, and, we, as a society, can but be of great benefit to our young State and the entire Northwest, by a faithful performance of our duty.

G. W. FULLER,
S. M. EMERY.

The Secretary was instructed to rent a room for storage of Horticultural property, and to correspond with the officers of local societies, relating to the holding of a summer meeting.

Wymann Elliot and R. J. Mendenhall were unanimously elected honorary life members of the society.

THE CULTIVATION AND PROTECTION OF ORCHARDS IN MINNESOTA.

BY J. T. GRIMES, OF MINNEAPOLIS.

In this cold climate we have much to learn in the cultivation and care of orchard trees and some things to unlearn, for the most plausible theories frequently fail in practice, and what we may claim to be an established fact to-day, to-morrow may prove to be no fact at all, and we are constantly surrounded by apparent contradictions that we are unable to explain.

It is plain that there can be no safety in planting an orchard of trees that cannot be relied upon to endure all probable extremes of cold in the place where they are to grow. Many who have thought differently have been brought most unwillingly to accept this conclusion as one not to be evaded. The limit of successful orcharding is determined by two factors: the intensity of the cold and the resisting power of the trees. The two past winters have done much to enlighten us on this very point and there can be little doubt that there is an exact limit under certain conditions that govern the vitality of every species and variety of plant, as regards temperature, and as we proceed north we find one after another in the catalogue disappear, until nothing but the lowest order of plants remain. Practically the planting of orchards in this climate must be limited to the varieties that are not killed by a minus temperature of 42 degrees. This is the aerial temperature at which the mercury congeals, and trees without sufficient resisting force cannot be called "ironclads." It is a matter of vital importance that we should understand the prerequisites to success, without which after cultivation and protection is little less than loss of time and labor.

There are various opinions in regard to cultivation; some contend that orchard trees should be deeply planted and their cultivation somewhat neglected, in order to have them ripen up early, thus producing little wood well matured before the cold sets in. Others say plant shallow (no deeper than the trees grew in the nursery), in good soil, give good cultivation, ridging up to the trees, mulch heavily and wrap the trunks for the winter, and in a few years the roots will penetrate below the frost so as to insure a circulation of sap to some extent without regard to temperature, by which the vitality of the tree is maintained. Good in theory, but what does it amount to in practice if the trees are not hardy enough for the climate without it? Why is it that we have so many black-hearted trees in all our orchards that stand as witnesses against the recommendations of this society? A black-hearted tree is one injured by cold and is self-condemned for planting where the winters are severe. Such trees never live long, or become profitable, and might as well be dug up at once. I have never known any but a black-hearted tree to bleed when cut or otherwise injured, and such trees always become the prey of insects which sometimes extend their depredations to the injury of whole orchards. Some have concluded that insects have been the main cause of disease when the reverse was the case. A healthy tree is rarely attacked. To an experienced eye the clear bark reveals the healthy tree.

Let us suppose that you have selected suitable grounds for an orchard, and that you have planted none but healthy, hardy trees, and that now your success depends upon the cultivation and protection you give them. In the first place, while the trees are young and until they come into bearing, the ground should be well tilled about them during the season of growth; but as soon as the growth checks, cultivation should cease for the season in order that the wood may ripen before cold weather, otherwise late cultivation would be likely to produce a second growth which could not withstand the severity of our winters, and the whole tree would be injured. Hoed crops of some kind, or small fruits, can be grown profitably between the rows while the trees are small, and just such cultivation as they require would be most beneficial to the trees.

Pruning may be considered a necessary part of cultivation. Some persons think

the knife indispensable in keeping the trees in proper shape. But my advice is to let your trees branch low and do but little pruning. Millions of trees have been destroyed by pruning, and this is more true in our northern climate than elsewhere, but it is true everywhere. Each wound made by the knife or saw is a danger and an injury. By beginning right and making the subject a study, trees need no pruning except such as may be done by the thumb and finger, and in this way may be grown to maturity without a scar. Yet sometimes we have ill-grown trees that must be pruned. When this is the case the first question is as to the proper season. The governing principle in all cases is to have as small an exposed surface as possible for the winter's cold to act upon. This excludes fall pruning in our climate altogether. When pruning is done early in the spring the wound will go on healing all summer, and many of the smaller cuts will be nearly or quite healed by fall. If it should be necessary to take off a larger branch than would likely heal over, better cut a little from the trunk, leaving a spur about an inch or two long, which should be covered well with paint or some elastic water-proof cement.

Manuring is as indispensable in keeping up the fertility of the soil of an orchard as for other growing crops, but should not be applied too liberally, especially near the trunks of the trees. When the orchard comes into bearing and the growth of the trees no longer permit the use of the plow, then it should be seeded down with clover or some other grass that will not make a compact sod, especially above the trunks of the trees.

We now come to that part of our subject which treats of the winter protection of orchards. In the first place, if your trees are not sufficiently hardy for the climate, better give them over to the tender mercies of the winter winds at once. Some advantage may be taken in selecting a site for an orchard for even the Duchess and Wealthy are not hardy in many localities. It is generally admitted that high ground is less subject to the extremes of heat and cold during the winter than low land, and a northwestern exposure is perhaps the best on account of the frost remaining in the ground longer in the spring, thus keeping back the circulation of sap until the proper time for the commencement of the season's growth. If, by any means, the sap could be kept in check until the hot days and cold nights that intervene between winter and spring is past, then we should hear less complaint of sun scald on the south side of our apple trees. I do not know but there is some analogy between sun scald and blight, and the cause of the one may in some measure be productive of the other. Protection from prevailing winds, especially the fall and winter winds, is very desirable, and for this purpose wind breaks of spruce, pine or arborvitæ planted around and through the orchard are worth far more than they cost, and if well cared for add much to the beauty and value of the grounds.

While the trees are young and the bark tender, rabbits and mice esteem it a privilege to have free access to the orchard, and sometimes before the owner is aware many trees are damaged beyond recovery. Blood or offal of most any kind sprinkled on the bark will keep away the rabbits, and working the ground up to the trees, or a small mound of earth thrown up around them will usually keep off the mice. This last precaution is also necessary when trees happen to stand in low spots and where the water is liable to freeze around them. I have known many trees to be girdled in this way.

There is still another difficulty to be considered and one of no little importance in winter protection. Most of our hardy trees have been grafted upon seedling roots grown from seeds collected promiscously at the cider mills and are consequently are tender and unreliable as stocks for grafting, and unless there is a sufficient covering of snow, or the ground about them heavily mulched, are almost sure to winter kill, and such will be the result until our nurserymen are willing to stake their reputation upon the hardiness of the roots as well as the tops. This fact has led some to believe that the roots of fruit trees are more easily killed by cold than the trunks and limbs. I have known apple trees that appeared healthy and vigorous at the putting forth of the leaves in spring to die before midsummer from this very cause. This is a matter of the most vital importance to every fruit-grower, and one which is not yet understood in all its bearings as it should be. Hence this society together with those nurserymen that meet with us from time to time say mulch, mulch and save your trees! Yes, you may mulch the roots and wrap the trunks in a blanket and kiss them to bed, and flatter yourself that when they become older, larger and stronger, they become more hardy and repay your tender care with all the lusciousness that Pomona can bestow. If trees become more hardy as they attain growth and age I have failed to notice it; on the contrary, many trees that grow thrifty in the nursery and seem hardy, fail in the orchard soon after coming into bearing. It is well and proper to mulch the roots and give all the protection possible, but if the trees have not vital force within themselves to resist the extreme degrees of cold to which they will be subject, better at once procure for them a burial place among the honored dead. It should be the work of this society to prove the hardiness as well as the quality of the fruits we recommend.

The State has given us a liberal annual appropriation to aid us in our investigations and experiments and will certainly look to us for its legitimate results.

In discussing this paper President Harris said he had known orchards of black-hearted trees that lived to great age and were profitable. The heart wood of a tree may be dead or decayed and still the outside go on growing, and the tree continue thrifty and in full bearing. Yet would not recommend planting black-hearted trees when others can be obtained.

REPORT OF COMMMITTEE ON FLOWERS AND PLANTS, AND CANNED FRUITS.

The committee, in awarding premiums on flowers, plants and fruits, regret to find so few entries, deeming that competition would prove a stimulus to greater effort.

They feel, that in making this criticism, they condemn themselves, as well as others, and would suggest, that the society take such measures as would be conducive, to a larger and more attractive display.

The committee would advise the male members to use their influence with their wives, "their sisters, their cousins and their aunts," to induce them to take a more active part in their deliberations, and, at the same time, impart confidence to the

occasional woman interested in horticulture, who may timidly venture to seat herself upon the outskirts of this august assembly.

There are but few subjects discussed that would not prove of interest to a woman wishing to add to the comfort and beauty of her house, from the hardy evergreen, and apple tree, to the delicate flowers of the "Cyclamen," casting its refining influence over the most humble dwelling.

To be sure, she may not be so well qualified to judge of the hardiness of the tree but her *taste*, unimpaired by the use of tobacco, to say nothing of stroger stimulous, would at least render her more competent to test the superior quality and flavor of the fruit, and, if she would only remember that the good, old scriptural injunction, "Let your women keep silence in meeting," did not apply to Horticultural societies, she might, by uplifting her voice, show how much horticulture, by well directed effort, can do for woman, changing what is too often but a dreary abiding place, comfortless and unadorned, to a house in the true sense of the word, where grace, and beauty, and refinement, are taught by the trees and shrubs and flowers.

ANNA B. UNDERWOOD,
MRS. F. G. GOULD,
JULIA H. EMERY.

The following awards are made:

R. J. MENDENHALL,

1st premium on display of plants in bloom.
" " single specimen plant.
" ornamental foliage plant.
" floral design.
" " round boquet.
" " flat "

MRS. D. G. HEGGIE, Lake City.

1st premium on crab apple jelly.
" " canned raspberries.
" " mixed pickles.
" " display, Minnesota grown canned fruit.

Report of committee of awards on vegetables:

Wyman Elliot, of Minneapolis, O. Gibbs, of Lake City, and J. S. Harris, of La Crescent, make the following exhibit:

WYMAN ELLIOT,

1st premium on display of potatoes.
1st " peck early "
2d " " late "
1st " " beets.
" " 3 Hubbard squash.

O. GIBBS,

2d premium on display of potatoes.
2d " peck early "
1st " " late "

J. S. HARRIS,

1st premium on peck yellow onions.

President Harris offered the following copy of report of viewing committee on flowers at the State fair, which was ordered published in transactions:

The committee report a fine collection of plants tastefully arranged, those from Rochester being very fresh and beautiful. The fountain throwing sprays of water over the plants, greatly enhanced the beauty of the display, which was fully appreciated by the thronging multitude.

We have been greatly troubled to decide between the first and second premiums, for best display of green house plants.

We think that Mrs. Welch makes the finest show, and that her plants seem to be in the most healthy condition; but Mr. Salzer has more vase plants, and they have been longer on the grounds, and coming from a greater distance, has somewhat injured their appearance, still, we feel compelled to award him the first premium, and Mrs. Welch the second, for best display of green house plants.

The third premium is awarded to Mrs. Nisbet, whose collection is smaller, but in fine condition, and deserves honorable mention.

There is close competition between the exhibitors of coleus and foliage plants. Mr. Salzer's collection of coleus is large and beautiful, but Mrs. Welch has more varieties, with more brilliant maskings. Mrs. Welch's plants are less in number, but very highly colored and very thrifty; Mr. Salzer's more varied and tropical.

We found difficulty in awarding single plant, because but few were entered, so many being part of a collection, and not subject to a prize. Some plants on the premium list are not represented at all, and quite a number are entered that are not on the premium list.

MRS. N. C. CHAPIN,
MRS. C. F. YOUNGLOVE,
MRS. P. L. DANSINGBURY.
Committee.

The following letter from J. L. Budd, of Iowa, was deemed worthy of publication:

AMES, Iowa, Dec. 27, 1881.

Mr. J. H. Harris:

MY DEAR SIR:—I intended to get up to your meeting this year, but find I cannot, as our meeting commences on the 17th of January. If I could be on hand to defend it I would like to read a paper on the fruits of northern Europe. The subject is not well understood. There is no lack of winter varieties of the apple of the Astrachanica type around Moscow. At St. Petersburg the summers are too short and cool to mature winter varieties. Around Moscow are also grown pears, cherries, plums, and Apricots which would be valuable in your climate. The idea of making anything from the crosses of the Siberian crab will amount to nothing, as the whole race has too much tendency to blight. Sooner or later you will decide to make use of the fruits of northern Europe and Asia.

In judging of the Russian fruits, the idea should be kept in mind that when the scions were sent from St. Petersburg in 1870, Dr. Regel had just commenced his

work. He was a German, and very naturally he secured scions of over four hundred varieties from Dr. Lucas of the Pomological Institute at Reulingen, Germany. All of these were sent to Washington, with a few of the true Russian varieties.

Of course these German varieties would not stand with you, but on hardy stocks most of the Moscow sorts will prove as hardy as the Oldenburg.

I hope you will have a pleasant and profitable meeting.

Yours with respect,

J. L. BUDD.

As pertaining to the subject of Russian apples, the following letter from Geo. P. Peffer, while attending the Agricultural Congress at Washington will be of interest:

WASHINGTON, D. C., January 12, 1882.

U. S. Hollister:

MY DEAR SIR:—I have just met Prof. Porter, your delegate to the Agricultural Congress, and he asked me to report on the Russian apples in the government experimental grounds here.

Mr. Saunders says he has not yet seen a specimen of the apples that will keep or that is of any value here with him.

He says they are all liable to blight, but I find two varieties that have not yet blighted. The trees show that they cannot withstand the hot sun or heat. Mr. Saunders reports the fruit specked, but thinks both the specks and blight would mostly disappear if grown in a colder climate.

He claims that blight is not contagious. There has not been any call for scions lately, and as the ground is wanted for other purposes the trees will soon be dug up.

Cordially yours,

GEO. P. PEFFER.

Report of the Lyon county Horticultural Society, being a short history of that organization, and fruit reports from the members for the year 1881.

The Lyon County Horticultural Society was first organized in February, 1876, with J. W. Balke as President, and C. H. Whitney, Secretary.

It was re-organized, January 24, 1882, with G. M. Robinson, President, and G. M. Durst as Secretay. At this time a Constitution and By-Laws were adopted, and it was agreed to hold the fair of the society annually in connection with the fairs of the County Agricultural Society.

On January 27, 1882, D. C. Pierce was elected President, and S. B. Wheeler, Secretary. The work of the society has been to promote and encourage horticulture in its different departments, and to collect facts and statistics, some of which are transmitted herewith.

S. B. WHEELER,

Secretary.

FRUIT REPORTS FROM LYON COUNTY.

BY J. W. BLAKE.

In spring of 1874, I set eighty Hyslop trees on my residence lots, (in Marshall). Dug holes in the *prairie sod*, four feet in diameter, one foot deep. Did not break the land until 1877. I kept the trees well mulched with coarse litter during the

summer, never had any mulch left around them in the winter. They are now all alive and doing well, have never lost a tree except a few broken down by cattle. Last season they bore bountifully. Have never been troubled with the blight, vermin or any diseases. Have grown better and withstood the winters better in every respect than the ash or box elder, which were planted in the same manner and at the same time and equally well cared for. My trees are planted on a gentle southeast slope and are as hardy as forest trees. Don't recommend planting in the native sod, unless a person is just opening a new farm, then would do same as I done and break the sod the next year. Every land owner in southwest Minnesota, should plant a small orchard of crab trees for pleasure as well as profit.

C. E. PIERCE.

Have five acres of young forest trees growing. Broke the land in 1875-6 and sowed to grain for three years, and planted to corn the next year, and trees planted in with the corn. Trees consist of Cottonwood, Box Elder, and Lombardy Poplars. The Cottonwoods were "seedlings" pulled up along the Redwood river, also the Box Elders; Lombardys were cuttings. The Cottonwoods grow from three to five feet the first season. The Box Elders did not make much growth the first season—barely lived through. About two-thirds of the cuttings lived and made a growth of two feet. The Cottonwoods have continued to keep the start and are now from ten to twenty-five feet high, and make a splendid wind-break. The Box Elders are doing well now, but do not grow as Cottonwood, but make a fine shade tree. The Lombardies are growing fast now. I use the plow when the trees are small; after they get larger, the cultivator; am careful not to cut the roots when cultivating. Have never mulched them; think good cultivation is better.

ROBERT GARDNER

Came to Lyon county in April 1878, the first of May I broke the first sod, the next day I took a spade and turned back two or three furrows, dug the sub-soil up for a depth of twelve to fifteen inches, breaking the lumps up fine with the back of the spade, planted my apple trees and then replaced the sods around the trees. About the 10th of June I took the sods away from the trees and gave the soil a good stirring and replaced the sods. I planted fourteen apple trees this way, when they had been planted five months they were a surprise to my neighbors and to all who saw them. My neighbors were so much encouraged at my success that when I ordered more for my own use they had me order some for them. I got my trees from Mr. Gould, of Excelsior, he furnished them to us at cost to encourage us in planting. All of my subsequent plantings have done well, and all of my neighbors who have planted are much encouraged at their prospect of raising their own apples in the near future, and those who have not planted are now sorry and say they shall plant this spring. But oh! the wicked, wicked winter of 1880-81. The deep snows broke nearly all the branches off and then the settling crust broke the bodies of the trees down. My apple trees were set next to a grove of cottonwood, ash and box elder, which caught the snow and lodged it on my fruit trees. Think if they had not been surrounded by this grove they would have come out all right, they have made a good growth the past season. The first I planted, fourteen only, were so large that they came out in good shape last spring, and promise to bear some fruit this year. I have 250 apple trees now alive.

Plums do well, have a plum shoot which shows a growth of over six feet last season. Currants with a liberal mulching do well. Gooseberries have blighted badly with me, can any one tell me a remedy? My place is on the Coteaus, a sandy soil and some gravel on the ridges.

SETH JOHNSON

Thinks thinning out the bushes might help the blighting of gooseberries, also heavy mulching so as to hold them back in the spring.

In June 1873, I planted about five acres of cottonwood cuttings on land broke the year before, also planted eighty rods of willow hedge on same kind of land, two furrows from the unbroken sod. The reason I planted so late was owing to failure to get my cuttings through in time as the car they were shipped in was returned from New Ulm, east. My cuttings were in bad shape, about one-third of them lived and to-day I measured cottonwood which are 36 to 40 inches in circumference, willows with six branches from one cutting measured as follows: 14, 19, 19, 20, 20 and 22 inches in circumference. How is that for less than eight years growth from one cutting a total circumference of 114 inches. I have also a nice lot of soft maples, seeds sown June 1876, measuring 14 inches in circumference. Black walnuts transplanted four years ago ten inches. Centennial tree, one inch in diameter when planted, now measures 30 inches in circumference. Scotch Pine transplanted in 1875 from O. F. Brand's nursery, 18 inches in circumference. Transcendant and Hyslop planted five years, measure 14 inches in circumference. Set my apple trees too near my forest trees, snow drifted over them and broke them down badly last winter. In 1873 I planted two rows of currants 12 rods long on sod broke that spring, the third year had an abundance of fruit from them. I want to caution our farmers about setting their fruit too close to their groves, as the snow is sure to lodge in and break down their trees and shrubbery. I have had good success with gooseberries, also Philadelphia raspberries.

LEVI S. KIEL.

I have some over 100 apple trees, most of them are crabs. Have a few of the Wealthy and Duchess of Oldenburg. Commenced planting seven years ago, have cultivated thoroughly, used some manure, never mulched any of them. Have never been troubled with any disease; only trouble I have had was to get trees to plant; have never pruned my trees much; don't know but they would do better if I did, but believe in letting well enough alone. Had over fifty bushels of apples last year. They were all sound and smooth, as good quality as any apples that can be bought in the market. Trees are all hardy and healthy stand the climate as well as forest trees. My orchard is set on the bottom lands of the Redwood river Soil rich sandy loam, has been cultivated since 1870.

R. D. BARNES.

Have a fine young grove of forest trees. Have willows set in 1873 which are now forty inches in circumframce, and thirty-five feet high. Maple (soft) seed planted in 1877 that are eighteen feet high and five inches in diameter. Cottonwood cuttings set 1879, now from twenty to twenty-four feet high; believe the Cottonwood to be the best to plant on the prairies for both shelter and fuel. Have Cottonwood that made a growth of ten feet last season. Have never given my grove any extra

care, could make them grow much faster if I tried. Have a few grape vines, planted four years ago, but never done well until last year, always had goo d care, think perhaps they had too much attention showed them, for after I quit working them so much, they done better; had a fine crop of extra nice grapes from them last year, large and very fine; think they are the Concord; got them from Filmore county, no name given. Have some currant bushes, but have not had very good success with them, the fruit is very small. Raspberries (red cap,) do well with very little care, winter kill some, bnt seem to recover every year and bear well not as much trouble to raise them as to raise a crop of corn. Strawberries do wel with me. No reason why every farmer in Lyon county can't have all the small fruit he wants. $10 invested this spring in currants, raspberries and strawberries, will give him all the berries he can use in two years.

APPENDIX.

NOTICE OF ANNUAL MEETING, 1883.

The annual meeting of the Minnesota State Horticultural Society for 1883, will be held at the Agricultural Hall of the State University, Minneapolis, commencing on the third Tuesday, the 16th of January, and continuing four days. Full programme and premium list will be issued hereafter.

Among the premiums offered are $25.00 for the best essay on the propagation of improved seedling fruits, and $25.00 for the best essay on the management of orchards in Minnesota. The essay on orchards must include the selection of site, preparation of soil, choice of varieties, general care and cultivation, pruning, budding, grafting, protection from severities of seasons and from insects, harvesting and marketing of fruit, etc These essays should be sent to the Secretary, or notice given him, before the date fixed for the meeting in order that a place may be reserved for them in the programme. All essays offered for these premiums are to be the property of the Society, to be published at its discretion.

Premiums will also be offered in the programme for winter fruits, flowers, plants and vegetables.

Features of special interest in the exhibits will be displays of seedling apples and new varieties of potatoes. Prof. Edward D. Porter of the State University, has kindly offered to receive and store for the exhibition, any specimens of fruits or other products of agriculture or horticulture sent him for that purpose. He has every convenience to keep them in good condition.

By arrangement with Prof. Porter, the week of the meeting of the State Horticultural Society, will be the Horticultural Week of the "*Farmers' Lecture Course*" of the State University. The lectures engaged by him for that week will be delivered before the State Horticultural Society, and be published in its transactions. Among them it is understood, there will be a lecture by Prof. C. V. Riley, Entomologist of the Department of Agriculture at Washington, on Insects injurious to Agriculture and Horticulture, and it will be devoted specially to insects now threatening the industries in the northwest.

The membership fee in the State Horticultural Society is one dollar, and entitles any person a voice and vote in all meetings and to the usual privileges of reduced rates on railroads going and returning from the meetings, and to hospitalities extended to members at place of meetings; also to the annual reports or transactions. Persons joining before the next annual meeting will be entitled to transactions for 1882-3, and to membership for both years.

Special Notice to Members:—It is understood that a competent short hand reporter will be employed at the annual meeting to take down the discussions, verbatim for the use of the Secretary in editing the transactions, and that the published reports will be as full and complete as space will allow.

For further information address,

OLIVER GIBBS, JR., Acting Secretary.

LAKE CITY, MINN.

INDEX.

Page.

Acting Secretary, appointment of 3
Act of Legislature, 1881 10-16
Appropriation to State Horticultural Society 10
" for Experimental Fruit Farm 16
Apples..11, 15, 16, 22, 23, 24, 32, 33, 36, 62, 66, 67, 68, 69, 91, 92, 94, 102, 114, 123, 125
Amber Cane 13-25
Addresses of President Harris 14, 15, 16, 17, 18, 38
Annual meeting 1882 35
American Pomological Society 41-42
Apple Culture, Future of, Paper by E. Wilcox 45, 46, 47
Apple Blossoms, Paper by Geo. P. Peffer ..... 71 to 74
Abernethy, W. J 21, 62, 82, 116
Arnold W S 21, 25, 31
Awards on Fruit 116
" Flowers 122
" Vegetables 122
Blackberries 62, 67, 68, 104
Bowen, Theodore 23
Brimhall, W. E 23
Bowen, James 35, 60, 61
Bates S 70, 91, 92, 93
Budd, J. L 71, 101, 123
Breckenridge, Mrs 94
Butler, H. C 94
Burcherd, H. M 94
Bartlett, J. C 21
Buck, Daniel 59
Blake, J. W 124
Barnes, R D 116
County Agricultural and Horticultural Societies 10
Committees, payment of expenses of 10
Catalpa Speciosa 66
Committee on Seedling fruits 11
Cherries 67, 68, 90, 123
Currants 68, 91, 103, 126
Cyclamen Persicum, Culture of, Paper by James Bowen 60, 61, 62
Cranberry Culture, Paper by J. S. Stickney 29, 30, 31
Crabs and Hybrids.. 11, 15, 16, 22, 23, 24, 32, 33, 36, 67, 68, 69, 91, 92, 103, 123, 126
Canned Fruits 37, 121
Cross, Dr 15

Carpenter, E. F. 21
Crawsha, Mrs, Thomas.... 23
Carroll, M. D. 23
Church, Joseph 23
Clark, Joel 21-23
Cook, G. A. 23, 32, 92
Cook, M. W. 23-94
Crawford, M. 35
Cotterill, R. J. 91, 92, 93
Chicago, St. P. & Milwaukee R. R. 33, 118
Commercial Orcharding 113
Chicago & Northwestern R. R. 118
Chicago, Minneapolis & Omaha R. R. 118
Climate 118
Delay of Trees and Plants, Paper by M. Pearce 56, 57, 58
Domestic Fruits, Paper by A. W. Sias 89, 90, 91
Distribution of Reports 10, 111
Dwelle, G. M. 22
Dwelle, Abner 22-92
Doughty, F. H. 22
Dart, E. H. S. 52, 59, 60, 66, 79, 81, 82, 83, 85, 101, 102, 110
Executive Committee, meeting of 3-1
Experimental Station 43
Evergreens for the Prairies, Paper by G. W. Fuller 77, 78, 79
Experimental Fruit Farm 16, 62, 112
Elliot, Wyman 11, 21, 23, 26, 44, 112, 118, 122
Estes, D. C. 22
Eaton, E. C. 21, 25, 32
Emery, S. M. 36, 44, 45, 52, 58, 59, 65, 66, 84, 87, 104
Emery, Mrs. S. M. 45
Fall Meeting, 1881.... ..... 15 to 33, 42, 111
Flowers and Plants 13, 22, 25, 32, 36, 37, 114, 121
Fruits, Domestic 89, 90, 91, 116, 124
Forest Tree Culture, Address by S. M. Emery. ..... 104 to 110
Fetzer, B. B. 23
Fountain, A. W. 23, 24, 93
Forster, Wm. 23, 70, 82, 90, 93
Fawcett, Isaac 35, 45, 48, 51
Fuller, G. W. 35, 45, 67, 77, 78, 79, 82, 102, 115
Fish, Geo. H. 60, 68
Folwell, W. W. 62
Fishbeck, Mrs, J. S. 94
Fridley, A. M. 94
Gooseberries 67, 91, 103, 126
Grapes 11, 15, 16, 24, 32, 33, 36, 62, 66, 67, 69, 85, 86, 87, 90, 103, 114, 127
Grains and Vegetables 25, 31, 32, 37
Gates, S. K. 22

Greenman C. H..... 35, 36, 85, 86, 87
Garfield Charles W..... 90
Gaylord, S. H..... 90
Grimes, J. T..... 36, 44, 51, 59, 63, 81, 82, 84, 85, 102, 116, 118
Gould, Charles..... 21, 25, 32
Gould, F. G..... 44, 52, 66, 84, 85, 87, 102, 115
Gould, Mrs, F. G..... 45
Grannis & Wilson..... 21, 25, 32, 102
Gideon, Peter M..... 17, 46, 62, 63, 64, 65, 66, 82, 84, 85, 90, 97
Gibbs, Oliver, Jr ... 11, 20, 21, 22, 25, 26; 31, 32, 33, 47, 48, 51, 52, 59, 63, 64, 65, 66, 68, 69, 70, 71, 74, 79, 82, 83, 84, 92, 101, 102, 113, 116, 117, 122
Gibbs, Miss Maggie..... 25, 32
Gale, H. A..... 118
Gardner, Robert..... 125
Handbook of Horticulture..... 43, 112
Horticulture at State Fair, Report of J. S. Harris..... 91, 92, 93, 94
Hardy Apples from Seed, Paper by F. K. Phenix..... 94 to 101
Hoag, Charles..... 104
Hollister, U. S..... 3, 11, 44, 59, 66, 70
Harrison, Wm..... 82
Hovey, M. J..... 91
Hoag, M. J..... 93
Hoag, Mrs M. J..... 94
Hodges, L. B..... 110
Humphrey, D. W..... 11
Harris, J. S.... 11, 14, 15, 16, 17, 20, 21, 23, 24, 33, 36, 38, 46, 52, 55, 59, 60, 63, 70, 79, 82, 83, 87, 91, 92, 93, 94, 101, 102, 116, 121, 122, 123
Hazlett, Silas..... 22
Hill, Myron..... 22
Heine, Mrs Amelia..... 23, 92
Harrison, Baker..... 23, 32, 92
Heggie, D. G..... 21, 23, 25, 32, 45
Heggie, Mrs D. G..... 25, 32, 122
Hartman, Mrs Geo..... 24, 90
Insects, Paper by R. J. Mendenhall..... 53 to 55
Ingram, M. M..... 22
Jewell, Wm..... 22
Jewell, P. A..... 69
Jewell, Mrs P. A..... 16
Jordan, E. B..... 36, 55, 59, 63, 66, 79, 81, 82, 84, 85, 91, 92, 93, 101, 102, 113
Johnson, Seth..... 126
Konig, C..... 23
Kramer, John C..... 66, 70
Kiel, Lewis S..... 126
Lewis, Uriah..... 24
Lyon, Wm..... 52
Labbitt, Geo..... 53

Lake Pepin Hort. Society 92, 93
Lyon County Hort. Society 124
" Fruit Reports 124, 127
Members State Hort. Society 8, 9
Miss. Valley Hort. Society 41, 42
McLean, N. C 14
Montgomery, Mrs 22
Mateer, Thos 23, 32, 92
Monroe, John 23
Matthews, M. I 66
Moore, J. K 111
Murray, Mrs W. R 26
Michenor, D. K 23
Mendenhall, R J 44, 53, 54, 55, 66, 84, 112, 118, 122
Markham, Mrs A. H 94
Nichols, Geo. H 23
Newton, Mrs W. S 93
Nesbit, Mrs 94, 123
Officers and Committees, 1882 ..... 4, 5, 6, 7
Olmstead County Hort. Society 92, 93
Orcharding, Commercial, Paper by E. B. Jordan 113
Orchards, Cultivation and Protection of, Paper by J. T. Grimes 118, 121
Plums, Paper by J. M. Underwood 79, 80, 81
Proceedings Fall Meeting, 1881 ..... 14 to 34
Printing and Distribution of Reports 10
Premiums on Seedling Fruits 112
Premiums 11, 12, 13, 15, 113, 116, 122
Plums 11, 22, 24, 32, 67; 69, 79, 80, 81, 90, 103, 114, 123, 126
Pears 62, 67, 69, 70, 123
Peach Culture 62
Potatoes 13, 31, 32
Plants 36, 121
Pearce, M 18, 19, 20, 21, 25, 26, 36, 44, 53, 56, 59, 60, 70, 79, 83, 101, 102, 117
Pratt, Collins 21, 23, 32, 33, 92, 117
Perkins, Geo 25
Peffer, Geo. P 26, 35, 36, 71, 72, 73, 74, 82, 94, 95. 96, 117, 124
Phenix, F. K 36
Pruning 117, 119
Pierce, C. E 125
Reports, Printing and Distfibution of 10
Cuts for 112
Committee on Exhibits at Lake City 22, 23, 24, 25, 26
Committee on Awards 31, 32, 33, 116
Of Society 110
Committee on Presidents Address 112
General Fruit Committee ..... 66 to 70
Committee on Final Resolutions 118
Committee on Flowers, Plants and Canned Fruits 121

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MAY 30 1906